Dynamic Capabilities within a Saudi Arabian Context.

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Academic Declaration

"While registered as a candidate for the above degree, I have not been registered for any other research award.

The results and conclusions embodied in this thesis are the work of the named candidate, and have not been submitted for any other academic award."

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Andrew Lindsay Cox

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Abstract

This thesis demonstrates new thinking and contributes to the field of organisational studies by advancing the Dynamic Capabilities (DC) framework. Firstly, by exploring the framework within the Saudi Arabian context and secondly, by providing a new construct based on the influence that the antecedent processes of organisational learning, organisational culture, and leadership capabilities have on DC. Additionally, the findings support the generalizability of the extended DC framework and argues that it would be relevant to other countries transitioning through periods of disequilibrium in their economic eco-system.

A literature review highlighted the continuing interest in the conceptual explanation of the DC framework and empirical studies. However, the literature review revealed a lack of empirical research on DC in Saudi Arabia, and gaps in how organizations identify and select the capabilities they need to build.

The Researcher's subjectivist epistemological philosophy is based on his assumptions that knowledge in Saudi organizations is a projection of the personal experiences, beliefs and values of individuals, thereby justifying the adoption of a subjectivist philosophical stance, and research methods that explore their individual understandings and subjective realities. To this end, the mixed-methods approach proved the best choice. Data was collected from a combination of semi-structured interviews involving critical purposively selected senior executives (Chairmen, CEOs, Vice Presidents, and Senior Managers), and an on-line survey questionnaire circulated to active practitioners in a cross-section of Saudi organizations. The data analysis (qualitative and quantitative) involved the NVivo application, and the SPSS 25 and SPSS AMOS applications.

The study contributes to practice by identifying implications at the macro, messo and micro levels.

Chapter 1 Introduction

1.1 Topic

Dynamic Capabilities within a Saudi Arabian Context.

The topic for this research study is the result of a comprehensive search of the literature. It reflects an interest that the Researcher developed from working many years in Saudi Arabia, and his affinity for how Saudi organizations plan for and manage change to ensure continual alignment of their asset portfolio with the changing business environment.

1.2 Research Aim

The purpose of this research was to develop a solution that Saudi organizations could adopt for identifying and building the dynamic capabilities, they require for sustaining continual change, growth, and long-term survivability.

A systematic literature review identified the Dynamic Capabilities (DC) (Teece, Pisano, & Shuen, 1997) framework as a suitable basis for a potential solution. A conceptual framework adapted from the work of Teece (2007), Teece, Pisano, and Shuen (1997) became the focus of this study.

1.3 Rationale

i. Saudi Government – Vision 2030 – challenges companies to innovate & grow (value and job creation)

The Saudi economy has relied for the past eighty years almost entirely on exploitation of its oil and gas deposits (Looney & Fredericksen, 1985, p. 5; Niblock, 2008, p. 13). However, social, geopolitical, and market pressures are forcing a foundational paradigm shift in its economic structures (Kingdom of Saudi Arabia, 2016b). The demographics of Saudi Arabia are putting pressure on the economy to provide an increasing number of jobs and job types for a well-educated young and mixed-gender population (General Authority for Statistics, 2016a). The central government control of the Saudi economy is applying pressure on Saudi organizations to achieve performance targets in job creation and value-adding (Kingdom of Saudi Arabia, 2016a). The global reaction to climate change is to reduce dependence on fossil fuel, which will ultimately reduce demand for Saudi Arabia's principal export commodity (Al-Kibsi et al., 2015, p. 19; UK Science & Innovation Network, 2018).

ii. There are gaps in the literature regarding empirical research of the application of DC and its relevance in a Saudi Arabian context.

The DC framework continues to mature and is the basis of an increasing number of empirical studies. Continuing interest in the literature and an increased number of published articles related to the DC framework. However, a systematic literature review has highlighted gaps in empirical research on how organizations go about identifying and selecting which capabilities they need in order to sustain growth during periods while significant change is occurring in their business environment.

Discussions on definitions of DC are plentiful in the literature. Albort-morant, Leal-rodríguez, Fernández-rodríguez, and Ariza-montes, (2018) detail the exponential growth in the number of publications; Ambrosini & Bowman (2009) provide a list of definitions; Barrales-Molina, Martínez-López, and Gázquez-Abad (2014) focuses on dynamic marketing capabilities; Eriksson, Nummela, and Saarenketo (2014) explore the cognitive capabilities aspect; and, Helfat & Martin (2015) explores leadership capabilities.

Teece, Pisano and Shuen (1997, p. 511) attribute the long-term survivability of organizations to the *'sustainability of* [their] *competitive advantage'*, which is dependent on the existence of DC (processes and routines) that are continually reviewed and maintained to ensure their suitability to the prevailing level of environmental dynamism in the organization's economic ecosystem (Teece, 2014b, p. 10, 2019, p. 8).

Pisano (2017) argues that there has been only limited empirical research on the dynamic capability processes (sensing, seizing, and reconfiguration). Burisch and Wohlgemuth (2016) suggest that the vagaries of business environments make it difficult to conduct comparative empirical research. Pezeshkan, Fainshmidt, Nair, Frazier, and Markowski (2016) provide an interesting analysis of a cross-section of empirical studies and conclude that DC are indeed a significant contributor to organizational performance. Much of this discussion relates to the effect that DC have on organizational performance rather than on what organizations perceive as prerequisites or enablers to making successful choices and decisions on what DC the organization should pursue and the pathways towards acquiring them.

iii. Contribute towards the theory of dynamic capabilities by exploring dynamic capabilities within a Saudi Arabian context.

Chapter 1 Introduction

This research study aims to contribute towards filling the current gap in the literature covering the application of DC within a Saudi Arabian context. The literature review identified only an oblique reference to Saudi Arabia in the discussion by Shuen, Feiler, and Teece (2014) on the relevance of the DC framework to the oil and gas industry, and the International Energy Agency's prediction that oil production in the United States of America will exceed that of Saudi Arabia by 2017 – 2020. Teece has confirmed that, to his knowledge, there has been no empirical study of DC conducted in Saudi Arabia (see 'Appendix 7 - Email from David Teece' below).

The literature describes the influence of an organization's culture, leadership capabilities, and learning and knowledge acquisition and integration on the organization's DC (Albort-Morant et al., 2018; Ambrosini & Bowman, 2009; Barrales-Molina et al., 2014; Barreto, 2010). While the scope of this project does not include a detailed study of the Saudi culture, the literature reveals very little evidence of similar research in the Saudi Arabian context. For example, both Hofstede's Cultural Dimensions in Management and Planning (Hofstede, 1984) and the project GLOBE (Global Leadership and Organizational Behavior Effectiveness) (House, Javidan, Hanges, & Dorfman, 2002) omit Saudi Arabia in the context of their studies (Shi & Wang, 2011).

1.4 Research Question

How do Saudi organizations identify and build the capabilities they will need to meet the challenges confronting Saudi Arabia.

1.5 Research Objectives

The research objectives focus on examining the potential application of the dynamic capability framework in a Saudi Arabian context. The aim was to explore the influence that leadership capabilities, organizational culture, and organizational learning have on how Saudi organizations identify and select those capabilities they need in order to sustain growth during periods of significant change occurring in their business environment.

i. To analyse the relationship between long-term survivability and the dynamic capabilities of Saudi Arabian companies.

ii. To determine the theoretical foundations of dynamic capabilities

iii. To develop a conceptual framework and examine previously unexplored relationships within a Saudi Arabian context.

iv. To examine the key factors that drive the development of dynamic capabilities in the context of Saudi organisations.

v. To explore implementation issues with the adoption of the conceptual framework by companies within Saudi Arabia

1.6 Chapter outline of the thesis.

This section provides a brief outline of the chapters in this thesis.

Chapter 2 Saudi Arabian Context and Challenges - provides a *précis* of Saudi Arabia's economic development. An American oil company, California Arabian Oil Company (Casoc), a subsidiary of Standard Oil of Southern California (Socal) controlled the first ten years of the development of Saudi Arabia's oil and gas deposits (Aramco Services Company, 1998, p. 3) until the mid-1970's when the Saudi Government launched its economic development strategies (Five Year Plans). The Saudi Government released its Saudi Vision 2030 in 2016 (Kingdom of Saudi Arabia, 2016b). This ambitious plan aimed at delivering significant economic and social reform in a conservative nation. This chapter also includes summaries of the predominant culture, leadership style, and learning style appearing in Saudi Arabia.

Chapter 3 – Literature Review details the findings from the systematic literature review. The literature review identified several theoretical perspectives (resource-based view, knowledge-based view, behavioural theory, evolutionary economics, network theory, transaction cost economics, and the positioning view) that influence the DC framework (Di Stefano, Peteraf, & Verona, 2014). A majority of authors cited the resource-based view as having the most influence. The RBV assumes that the existence of valuable, rare, inimitable, and non-substitutable (VRIN) resources (tangible and intangible) determine organizational performance (Garavan, Shanahan, Carbery, & Watson, 2016; Helfat & Peteraf, 2015; Kay, Leih, & Teece, 2018; Vanpoucke, Vereecke, & Wetzels, 2014).

However, Teece does not constrain DC to just the resource-based view. Instead, Teece sees the DC framework as *'an analytic lens into the activities of organizations'* (Teece, 2014b, p. 329). Teece views DC reflecting a combination of several theories/views with an emphasis on innovative leadership, systems theory, and a neo-Schumpeterian approach to economic transformation through innovation (Teece, 2017, 2018b).

Chapter 1 Introduction

Definitions of DC abound in the literature. However, it is clear that DC are not the 'ordinary' capabilities required for maintaining 'normal' operations in a stable environment, and relate to doing the 'right things' rather than being efficient at doing 'things right'. Discussions appear about the suitability of the DC framework in rapidly changing environments (Eisenhardt & Martin, 2000), and the notion of how to measure environmental dynamism resulting in three categories – stable, moderate, and volatile.

Chapter 4 Developing a Conceptual Dynamic Capabilities Framework identifies the DC framework (Teece et al., 1997), as suitable for this study. This chapter provides a detailed perspective of the expanded DC framework (Teece, 2007), and discusses a conceptual framework that incorporates the antecedents that were identified in the literature review as critical to building dynamic capabilities. This chapter introduces the argument that the antecedents (organizational learning, organizational culture and leadership capabilities) are so tightly interrelated that consideration of their impact on the identification and development of DC can only be in the collective form.

Chapter 5 Methodology - describes the research philosophy and strategies, including the mixed-method approach adopted by this study to address each of the research objectives. A mixed-methods approach has proved beneficial for this study. By combining the qualitative inputs from critically purposively selected senior management of Saudi organizations with the quantitative data from survey respondents, it has been possible to build a more vibrant and substantial picture.

Chapter 6 Findings - provides a detailed analysis and intersection of the data collected from the multiple sources, literature, Researcher's observations, interview information, and survey data. The tools used in this analysis included NVivo for thematic analysis of the qualitative data, SPSS AMOS for model fit, and SPSS 25 for relationships between variables. See Appendix 4 - Preliminary analysis of Survey data (below), Appendix 5 - Exploration of relationships among variables (below), and Appendix 6 - Comparisons of groups – t-tests (below) for details of the analysis tests performed and results. The thematic analysis of the interview transcripts highlighted the contextual themes that are triggering a change in Saudi Arabia, particularly the role of the Saudi Government in driving economic and social change.

Chapter 7 Conclusions, Contribution to Theory and Practice, Limitation of Research and Suggested Future Research. - This critical chapter confirms that the study has followed a rigorous method and has developed an interesting and compelling argument in favour of the conceptual framework. It reflects on the findings and provides an interpretation of how well the results related to the research hypotheses. It provides an essential indication of the level of influence that the antecedents have on DC in Saudi organizations. It confirms the statistical strength of the constructs and illustrates the discrepancies between Saudi organizations on how they build and maintain dynamic capabilities. This study contributes to theory by adopting rigorous research methods and testing a modified framework that illustrates the tightly integrated influence of the antecedents (organizational learning, organizational culture, and leadership capabilities) on dynamic capabilities. The context (Saudi organizations) of the study was a limitation, and the study would benefit from further research using a longitudinal approach to assess the long-term survivability of organizations.

Chapter 8 Author's personal development – this chapter provides a reflection of the metamorphic journey the Researcher has travelled in completing this DBA.

References – contains a list of the articles cited in this document.

Appendices – contains a set of supporting material used to develop this thesis as well as the Ethics Review Checklist – FORM UPR16.

Chapter 2 Saudi Arabian Context and Challenges

The purpose of this chapter is to provide the reader with the context of this research study so the reader can understand the challenges confronting Saudi Arabia and the research rationale. This chapter provides a *précis* of Saudi Arabia's economic development from when the Saudi Government introduced its economic development strategies (Five Year Plans) through to its ambitious Saudi Vision 2030 plan aimed at delivering significant economic and social reform in a conservative nation.

2.1 Background

To understand the current Saudi Arabian context, it is appropriate to revisit the history of the Kingdom and the milestones in its economic development. Before the discovery of commercial quantities of oil in 1938 at Dammam No.7 well (Aramco Services Company, 1998), the principal source of revenue for the Saudi Government came from fees and charges imposed on pilgrims performing Hajj or Umrah to the holy places of worship in Mecca and Medina (Peterson, 2018; Willis, 2017). As expected, the limited availability of funds had a constraining influence on the development of infrastructure within the Kingdom (Peterson, 2018). To the extent that roads, hospitals, schools, and port facilities did not exist to any significant extent. For example, the Ottoman Government had, before World War I, developed the only railway in the Kingdom, primarily to transport pilgrims and Ottoman military forces between Damascus, in present-day Syria through the Hejaz region of the Kingdom to Medina (Nicholson, 2006; Wilson & Graham, 2015, p. 36).

The Concession Agreement (1933) between Saudi Arabia and Standard Oil of California (SOCAL) (Aramco Services Company, 1998) was the trigger for the initial transformation of Saudi Arabia from a principally Bedouin nomadic society to a well-educated and industrial powerhouse in the Middle East (Bowen, 2015; Kostiner, 1993; Peterson, 2018). However, because of the 'greenfield' nature of Saudi Arabia, the Saudi Arabian Oil Company (Saudi Aramco) was the initiator of and remained the dynamo of all significant infrastructure development within the Kingdom, from airlines, ports, hospitals, roads, and schools, irrespective of their direct or indirect association with the production, processing, and distribution of crude oil (Aramco Services Company, 1998). Saudi Aramco has continued in this facilitator role to the present day where it features prominently in the Saudi Government's current vision for the transformation of the Kingdom and its economy.

The Saudi Government's Vision 2030, published on the 25th April 2016, challenges organizations within the Kingdom to transform, diversify, and grow the economy. However, this is not the first time that the Saudi Government has issued plans to transform its economy and reduce its dependency on oil revenues. The Saudi Ministry of Economy and Planning provides a repository of its economic development plans on its website at https://www.mep.gov.sa/en/Knowledge-Center/. A 400% increase in the price of oil in the 1970s provided the funds for the Saudi Government's first economic five-year plan, which resulted in the creation of its petrochemical industries (Niblock, 2008). The second economic development plan focused on the development of infrastructures, such as roads, ports, and power generation (Looney & Fredericksen, 1985; Niblock, 2008). By the 1980s infrastructure spending slowed, and the focus of the third economic development plan shifted to education, health, social services, and the creation of two industrial cities (Yanbu on the Red Sea coast, and Jubail on the [Persian] Gulf) (Looney & Fredericksen, 1985; Niblock, 2008). The fourth economic development plan focused on the development of the private sector as a further counter to the Kingdom's dependence on oil (Niblock, 2008). Banks, albeit initially branches of foreign banks were established; and, Saudi Aramco hived off many of its non-core activities, such as transport, construction, television, catering, and services, to employees who formed their own companies (Aramco Services Company, 1998).

A number of significant events occurred in the Middle East during 1979 that influenced subsequent economic development plans included, the Camp David agreements, the siege of Mecca, the Iranian Revolution and the occupation of Afghanistan (Bozarslan, 2012). These events and the perceived potential threat to the House of Saud, initiated a build-up of Saudi defence forces, and efficiencies in government departments (Ministry of Economy & Planning, 2017; Niblock, 2008, p. 18).

The sixth economic development plan aimed at further diversification and shifting the Kingdom's economy from oil (Niblock, 2008). This plan included the introduction of "Saudization" or the nationalizing of the labour market particularly in the private sector, which is dominated by cheaper foreign workers (Niblock, 2008). The seventh economic development plan also aimed at further diversification of industry, and job creation for Saudis.

In summary, these five-year economic development plans dating from the 1970s all share a similar theme of reducing the reliance of the Saudi economy on oil revenue through

diversification of Saudi industry and creation of jobs for Saudis (Looney & Fredericksen, 1985).

The Saudi Government's General Authority for Statistics provides a repository of demographic data on its website at https://www.stats.gov.sa/en. The data provides strong motivation for the Saudi Government's interest in job creation and "Saudization". As the wealth of the Kingdom increased on the back of oil revenues, and it invested more in hospitals and health services, child mortality rates declined (Ramady, 2010). Consequently, the population grew more rapidly than at any previous period in the Kingdom's history. The demographic data provides a clear picture of a very "young" population in need of their share of the Kingdom's wealth. For example, by the middle of 2016, 67% of the Saudi population was under 35 years of age (General Authority for Statistics, 2016a; UK Science & Innovation Network, 2018).

The General Authority for Statistics, (2016b) records that, as at the middle of 2016, the unemployment rate for the entire population was 12%. However, decomposing the data into age groups gives a different story. For example, unemployed males within the ages 15 – 19, exceeds 40% while unemployed females in this age group exceed 60%. Unemployed males within the ages of 20 – 24, exceeds 30% while unemployed females in this group exceed 70%. Unemployed males within the ages 25 – 29, is about 9%, while unemployed females in this group are about 57%. Unemployed males within the ages 30 – 34, is about 3%, while females in this group are about 34%. An *a priori* analysis of the demographic data (General Authority for Statistics, 2016a) provides the basis for reasonable assumptions of a society with a significantly underutilized pool of talent, which in itself presents a highly probable trigger for change and political concern that any change can be anticipated, and managed within social norms.

This discussion supports the argument that the Kingdom of Saudi Arabia represents a perfect combination of rapidly changing economic and social factors that provides a compelling argument for introducing the principles of DC into their organizational strategic thinking and planning practices.

2.2 Vision 2030

The aim of "Saudi Arabia's Vision 2030" is to provide government agencies, and the private sector with a *"methodology and roadmap for economic and developmental action in the Kingdom of Saudi Arabia"* (Saudi Arabian Government, 2016). In essence, it provides the

strategic directions, policies, goals, and objectives of the Kingdom as it enters a new phase of diversification and reduced reliance on oil revenues. It would be easy to take a cynical perspective of Vision 2030 and view it as a repeat of economic plans from the past, simply presented in a different package. However, the major themes of Vision 2030 include more than just "a thriving economy" (Saudi Arabian Government, 2016); they also include a "vibrant society", and an "ambitious nation". Vision 2030 addresses many of the social inequalities that have persisted for generations and which have become part of the Saudi national culture. Examples include females being allowed to drive (Wilson & Graham, 2015, p. 5), mixed genders attending social events, the reopening of cinemas (Saudi Arabian Government, 2016), and the removal of male guardian approvals necessary for females to travel abroad. Improving the mobility of females by allowing them to drive and to travel unaccompanied by their male guardian, should contribute significantly to the Saudi economy by reducing the need for families to hire foreign drivers, and making it easier for females to enter the workforce outside of their homes. The obvious immediate benefit is a reduction in expenses and an increase in family incomes. At a national level, less foreign workers mean less money remitted to the foreign workers' home countries. Overall, it should result in a significant increase in the Kingdom's gross domestic product (GDP) (World Bank, 2017; World Economic Forum, 2016, p. 31).

Vision 2030 also aims to ensure transparency in business and government affairs and eliminate systemic corruption and the power of *"wasata"* or influence of "friends" and "classmates". The performance of government agencies is measured against an extensive range of performance indicators and targets intended to highlight failures as well as successes (Kingdom of Saudi Arabia, 2016a).

The political situation in the region, particularly the war in Yemen and the Saudi's fear of encirclement by proxies of Iran has caused significantly increased spending on defence material; mostly sourced from overseas suppliers in the United Kingdom and the United States of America. Vision 2030 recognises this drain on the Kingdom's resources and includes a provision to manufacture half of its military material needs within the Kingdom.

A significant component of the Saudi Vision 2030 is their National Transformation Program (NTP) 2020 (Kingdom of Saudi Arabia, 2016a). The Saudis consider the NTP as establishing the strategic objectives, performance indicators, and targets necessary for Saudi government agencies to fulfil the foundational needs of Vision 2030.

Vision 2030 activities include: the public listing of the Saudi Arabian Oil Company (Saudi ARAMCO); localizing the development of renewable energy; expanding the tourism industry and increasing the number of UNESCO listed heritage sites; increasing the search and extraction of minerals, and downstream manufacturing; and, the privatization of government services where appropriate.

2.3 Culture

A reflection on the formation of the Kingdom and its rapid industrial development helps with understanding the national culture of Saudi Arabia. Before the formation of the Kingdom of Saudi Arabia in 1930, the Arabian Peninsula formed part of the Ottoman Empire. The population was mainly nomadic tribes with few large cities in the Hejaz (western province) around Jeddah, Mecca, and Madinah (Wilson & Graham, 2015, p. 16). Abdulaziz ibn Saud (Armstrong, 1934), with the assistance of the Wahhabis (Willis, 2017, p. 347), founded modern Saudi Arabia through a process of unification of all the Bedouin tribes (Wilson & Graham, 2015, p. 48). However, to this day, there is an argument that the Saudi national culture remains a collection of tribal cultures rather than a single homogenised national culture (Bjerke & Al-Meer, 1993).

Hofstede's dimensions (Hofstede, 1980) provide a means of measuring national culture. Many researchers (Alajmi, Ahmad, Al-ansi, & Gorondutse, 2017; Bjerke & Al-Meer, 1993; Tlaiss & Elamin, 2015) have used Hofstede's dimensions to research various aspects of Saudi national culture. Islam and the teachings of the Prophet Mohammed (PBUH) have a strong influence on the behaviour of Saudis (Bjerke & Al-Meer, 1993). For example, Saudis will often refer to their holy book, the Quran, for guidance on leadership, work ethics, organizational commitment, and relationships with subordinates and superiors. The highly structured, hierarchical nature of typical organizations in Saudi Arabia illustrates a large Power Distance dimension (Hofstede, 1980; Shi & Wang, 2011). Saudi organizations will generally follow a command and control structure where leadership is defined by the leader's position rather than their skills, and subordinates expect to be told by their leader what they need to do (Bjerke & Al-Meer, 1993).

The collectivistic nature of Saudi society is a reflection of their adherence to Islam, which promotes commitment to 'the group', whether tribe, family, or work. As a consequence, Hofstede's Individualism dimension scores low in Saudi society where

relationships are of paramount importance and heavily influence decisions such as hiring, awarding of contracts and promotions (Bjerke & Al-Meer, 1993).

Underutilization of females in the Saudi workforce as represented by their high rate of unemployment supports the view that Saudi Arabia is primarily a masculine society, scoring highly on Hofstede's Masculinity dimension (Bjerke & Al-Meer, 1993).

Hofstede argues that national culture influences the behaviour of individuals in organizations. However, there is also an argument, albeit a subtle one, that the national culture of employees, within an organization, influences their organization's culture. In the Saudi Arabian context, this bidirectional influence is a direct consequence of a large number of expatriate employees, particularly westerners, brought into the country at the early stages of the Kingdom's economic expansion, to help establish the oil and gas, petrochemical, mining, and manufacturing industries. In some cases, there is clear evidence of western-style policies and procedures reflected in organizations' management, training, and leadership development practices (Aramco Services Company, 1998). Institutional theorists would argue that there are multiple cultures within Saudi Arabia, national, tribal, family, and organizational, that have evolved and been influenced by external and internal actors (Zilber, 2012).

An objective of this research project will include examining how the prevailing organizational culture of Saudi organizations contributes towards building DC and future proofing the organization's survivability.

2.4 Leadership

Hofstede (Hofstede, 1984) argues that management skills are culturally specific, and what works for one culture may not work for another. Bjerke and Al-Meer (1993) assert that Saudi leadership is risk-averse and more likely to resist change for emotional reasons such as loyalty to leaders and the organization. Saudi leaders do not typically follow a participative

(Note: While some Saudi tribes such as the Utaybah number in the hundreds of thousands, there are also very large extended families in Saudi Arabia that number in the tens of thousands.

style of management (Bjerke & Al-Meer, 1993), preferring instead to exercise the power of their position in decision making.

A study of leadership styles from a cross-section of industries in the Middle East, including Saudi Arabia; suggests that many organizations are failing to realise their full organizational potential, primarily because of the constraints imposed by the prevailing command and control leadership style (Williams, 2008). The study suggests that this form of coercive leadership has created a work environment that quashes innovation, and crushes employee motivation, initiative, and willingness to accept accountability.

An objective of this research project will include examining how the prevailing leadership capabilities of Saudi organizations contribute towards building DC and future proofing the organization's survivability.

2.5 Organizational learning

A common practice of major Saudi organizations has been to establish in-house training facilities such as schools and academies, to develop the technical skills of Saudi employees. This practice follows the Saudi Aramco experience, which first started simply to teach the English language to the Saudi labourers so they could understand the Americans working on the first drill sites in the 1930s (Aramco Services Company, 1998). In time, Saudi Aramco training programs expanded to include extensive training for apprentices and operators. The training programs proved very useful after the invasion of Kuwait in 1990, when the majority of western expatriate artisans and operators left the Kingdom, leaving the Saudis to rely on their resources to manage the production plants and distribution terminals (Aramco Services Company, 1998).

Training programs in Saudi organizations expanded during the 1970s to include the development of supervisors and managers, and organizations began sponsoring Saudis in undergraduate courses at universities in the United Kingdom, and the United States of America (Aramco Services Company, 1998). The past challenges for Saudi organizations have been to learn what they needed to know so they could operate their assets. Their current challenges include learning how to learn what they do not know.

An objective of this research project will include examining how the prevailing organizational learning practices of Saudi organizations contribute towards building DC and future proofing the organization's survivability.

Chapter 3 Literature Review and Theoretical Underpinnings of Dynamic Capabilities

The purpose of conducting a literature review was to determine the theoretical underpinnings that could explain the relationship between dynamic capabilities (DC). This chapter provides the results of a critical assessment of published material that would assist with achieving the research objectives.

The literature review has identified the dominant authors who have published articles that relate to the research aims and objectives and provides a detailed summation of the strengths and weaknesses of their arguments. The literature review confirms a gap in research relating to the application of the DC framework in Saudi Arabia, and research that considers the collective influence of organisational learning, organisational culture, and leadership capabilities on the DC framework.

This review confirms that interest continues to grow in the DC framework. However, while there has been much discussion in the literature about the definitions of the DC framework, some authors and scholars, for example, Pisano (2016), argues that there are significant gaps in the empirical studies relating to how organizations apply DC in practice (Pisano, 2016).

Many authors argue that DC are an extension of the resource-based view (RBV) of organizations (Ambrosini & Bowman, 2009; Barreto, 2010; Eriksson, 2014; Schweizer, Rogbeer, & Michaelis, 2015). RBV argues that distinctive bundles of valuable, rare, inimitable and non-substitutable resources (VRIN) provide organizations with a competitive advantage (Garcia, Lessard, & Singh, 2014; Teece et al., 1997).

The ‘organizational ecology’ school of strategic management contradicts the DC notion of organizational reconfiguration (Amburgey, 1996). This school argues that established organizations become overwhelmed by inertia to the extent that they are not capable of evolving to meet changes in technology or the market, and become replaced by less encumbered organizations. The DC framework argues that management can overcome these negative forces for change (Teece, 2007, 2012, 2014b; Teece et al., 1997).

The DC framework is not without its limitations in the context of strategy, and benefits from cross-fertilization from other theories such as institutional theory (Gölgeci, Larimo, & Arslan, 2017). For example, the combination of the core concept of DC (a competitive advantage in rapidly changing environments), with the core concept of institutional theory

(meaning and structure to organizational behaviour), could provide a more comprehensive understanding of organizational behaviour.

Being the best at doing something is no guarantee to long-term survivability (Lessard, Teece, & Leih, 2016, p. 222), as ultimately competitors will learn how to do it just as well if not better (Kay et al., 2018, p. 630). The purest test of organizational effectiveness is the organization's ability to survive over time (Teece, 2014b, p. 348, 2019, p. 10). Entrepreneurship and knowing of opportunities is only part of the process; Foss and Lyngsie (2014) and Teece (2012, 2014) argue that organizations must also know how to take advantage of these opportunities. To maximise the advantage presented by new opportunities, organizations must be capable of making unbiased decisions that are unfettered by its history, and capable of reinventing its business model (Teece, 2007).

A systematic literature review process (Appendix I) provided relevant peer-reviewed research articles and identified existing gaps in the literature.

3.1 What are Dynamic Capabilities?

3.1.1 Definitions

Despite the volume of active research since (Teece et al., 1997), as represented by the volume of papers published during the past twenty years (more than 5,000 peer-reviewed articles from academic journals); defining the DC framework continues to remain as elusive as ever for researchers, scholars, and practitioners. As a consequence, critics of the construct are justified in arguing that the divergence of understanding of DC's role in value creation, coupled with contradictory and overlapping definitions is both confusing and dysfunctional (Di Stefano et al., 2014; Zahra, Sapienza, & Davidsson, 2006).

The seminal authors defined DC as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece et al., 1997). However, Eisenhardt and Martin (2000) countered this argument. They questioned the ability of DC to be effective in rapidly changing environments, but conceded that DC relates to the processes adopted by an organization to integrate, reconfigure, gain and release resources brought on by change.

Despite these differences, a common theme of definitions in the literature is that DC relates to how organizations relate to, and react to change (Easterby-Smith & Prieto, 2008; Lee, Lee, & Rho, 2002; Winter, 2003; Zahra et al., 2006; Zollo & Winter, 2002). According

to Di Stefano, Peteraf, and Verona (2014), most definitions of DC in the literature either relate to that of Teece et al., (1997) or Eisenhardt and Martin (2000). In other cases, the articles either do not provide an explicit definition but reference the DC framework, or cite the definitions of other authors. Some authors suggest that DC trigger all organizational change (Zahra et al., 2006). This argument links organizational performance directly to the existence of DC or vice versa (Prieto, Revilla, & Rodríguez-Prado, 2009).

In relating these definitions to rapidly emerging economies such as China, where the speed of delivery is a priority, DC is defined in terms similar to that advocated by Teece, Pisano, and Shuen (1997). That is, routinized methods for sensing opportunities and threats; problem-solving; strategic decision making; and, efficient change management (D. Li & Liu, 2014). In essence, DC can be considered those routines, processes, and procedures that lead to choices on what strategic capabilities (Pisano, 2016) an organization requires in order for it to continually reconfigure (Schilke, 2014) its existing resources, acquire new resources, or dispose of redundant resources, to ensure that the organization is capable of continually aligning its products and services with the needs and expectations of the market (Ambrosini & Bowman, 2009; Donada, Nogatchewsky, & Pezet, 2016; Laaksonen & Peltoniemi, 2016). In making these choices on what strategic capabilities to build, Pisano (2016), presents a two-dimensional model that differentiates between deepening and broadening capabilities; and, whether the capability is market-specific or general-purpose.

Variations to this theme are presented by other authors to emphasise specific capabilities, such as marketing (Barrales-Molina et al., 2014; Fang & Zou, 2009; Zhang & Wu, 2016), leadership capabilities (Helfat & Martin, 2015; Helfat & Peteraf, 2015; H.-F. Lin, Su, & Higgins, 2016), entrepreneurship (Teece, 2007, 2014a; Zahra et al., 2006), knowledge (Easterby-Smith & Prieto, 2008; Eisenhardt & Martin, 2000; Nieves & Haller, 2014), and product innovation (Eisenhardt & Martin, 2000; Piening & Salge, 2015; Prieto et al., 2009). Given the diversity of definitions, (Helfat & Martin, 2015; Peteraf, Di Stefano, & Verona, 2013) argues that the best way to assess the advantage that a DC provides an organization is by applying the VRIN (Valuable, Rare, Inimitable, & Not-Substitutable) test.

Sample definitions of dynamic capabilities	Author/s
"The firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments."	(Teece et al., 1997).
"The firm's processes that use resources – specifically the processes to integrate, reconfigure, gain and release resources – to match or even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resources configurations as markets emerge, collide, split, evolve and die."	(Eisenhardt & Martin, 2000).
"A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness."	(Zollo & Winter, 2002).
"Are those that operate to extend, modify or create ordinary capabilities."	(Winter, 2003).
"The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker."	(Zahra et al., 2006).
"A firm's behavioural orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage".	(Wang and Ahmed 2007)
"The capacity of an organization to purposefully create, extend or modify its resource base."	(Helfat et al. 2007) cited in (Burisch & Wohlgemuth, 2016).

Table 3.1 - Sample definitions of dynamic capabilities

3.1.2 Dynamic Capabilities are not

In defining DC, it is useful to consider what it is not. DC are not the capabilities required by an organization to maintain 'normal' operations to satisfy existing customers; nor are they *ad hoc* problem solving or creative improvisation (Teece, 2014b; Winter, 2003). Ordinary capabilities are different from DC in that they relate to doing things the right way. In contrast, DC relate to doing the right things, at the right time (Teece, 2014b).

DC are not *ad hoc* problem-solving actions because they are repeatable and routinized processes (Zollo & Winter, 2002). They are not spontaneous *"firefighting"* reaction (Ambrosini & Bowman, 2009), and they cannot be considered *"good fortune"* (Helfat & Martin, 2015). DC are often confused in the literature as those qualities an organization requires in order to be adaptable. However, this approach misses the point that DC is about

how organizations make choices regarding strategic capability building, and the impact of those choices on long-term survivability outcomes (Pisano, 2016).

3.1.3 Analysis of definitions

The variations in definitions of DC (see Table 3.1 above) are explained by Peteraf, Di Stefano, and Verona (2013, P. 1390) as *'missing conversations'* between disciplinary groups. However, it is more likely that how scholars define DC will depend on the lens through which they view the framework. Kay (2018, P. 626) describes the majority of authors who define DC in a manner similar to Teece, Pisano and Shuen (1997) as also possessing advanced degrees in economics and an interest in performance and strategy.

DC are differentiated from the 'ordinary' capabilities required to maintain 'normal' operations in a stable environment. Long-term survivability and evolution of organizations are attributed to the existence of sustainable processes (capabilities) that are continually reviewed and modified to reflect the changing economic eco-system.

3.2 Types of Research on Dynamic Capabilities

3.2.1 Conceptual

The dominant author, in terms of publications and citations, on DC is David J. Teece (Albort-Morant et al., 2018; Ambrosini & Bowman, 2009; Barreto, 2010; Eriksson, 2014). The original conceptual work on DC (Teece et al., 1997) argued that existing strategic theories were deficient in helping to understand why some organizations could build wealth and competitive advantage during periods of rapid change while others failed. They proposed a framework of leadership and organizational processes, positions (assets), and paths (ways) to use for analysing how organizations create wealth. In this framework, leadership and organizational processes are the accepted usual way (routines, practices, and learning) for doing things in the organization. Position is the organization's current collection of assets (tangible and intangible) including technology, intellectual property, resources, customer base, and, supplier relationships. The combination of the organization's processes and positions represents its competences and capabilities. Paths are the strategic choices available to the organization (Teece et al., 1997).

The theories presented by Eisenhardt and Martin (2000), and Teece, Pisano, and Shuen, (1997), are complementary in many ways despite some apparent contradictions (Galvin, Rice, & Liao, 2014). They both emphasise the role of organizational routines

(managerial and organizational processes); and, they both see the DC framework as an extension of the resource-based view (RBV) of strategy. The dominant feature of dissent between these authors is whether the DC framework is applicable in rapidly changing environments, with Teece et al. (1997) arguing that it is applicable, while Eisenhardt and Martin (2000) argues that the DC framework has limitations in these circumstances. In most other ways, their opinions are complementary (Peteraf et al., 2013).

The current position includes the collection of assets controlled by an organization. For example, technological assets (Eisenhardt & Martin, 2000), complementary (downstream) assets (Teece, 2014b; Teece et al., 1997), financial assets (Teece et al., 1997), reputational assets (Sheng, 2017; Teece et al., 1997), structural assets (Helfat & Martin, 2015; Teece, 2014b; Teece et al., 1997), institutional assets (Teece, 2014b; Teece et al., 1997), market assets (Sheng, 2017), and organizational boundaries (Eisenhardt & Martin, 2000; Helfat & Martin, 2015; Peteraf et al., 2013; Teece et al., 1997). The current position influences strategic capability building decisions (Teece, 2007) because it intensifies risk aversion and limits entrepreneurial innovation (Foss & Lyngsie, 2014; Teece, 2012). Adaptive and innovative organizations (Dixon, Meyer, & Day, 2014) that are capable of expanding their customer base with new products do so because they are not constrained by their existing positions and are capable of creating, renewing and devolving capabilities (Danneels, 2008).

The *"fit for purpose"* nature of DC as a differentiator in the oil and gas industry was tested against six sets of challenges (Garcia et al., 2014) with the conclusion that companies who developed DC as a counter to those challenges stood a better chance of survival.

i. Research focus on dynamic capabilities

A common theme in the literature on DC has been attempting to bring together the many streams of research on the construct (Fainshmidt, Pezeshkan, Frazier, Nair, & Markowski, 2016) and its influence on organizational performance. This has resulted in several literature reviews (Albort-Morant et al., 2018; Ambrosini & Bowman, 2009; Barrales-Molina et al., 2014; Barreto, 2010; Di Stefano et al., 2014) that virtually all conclude using various approaches that the principal authors on the construct are Eisenhardt and Martin (2000), and Teece, Pisano, and Shuen (1997).

Findings from the literature reviews vary; from attempts to derive a standard definition of DC (Ambrosini & Bowman, 2009; Barreto, 2010); to discussions on extending empirical testing of resource-based theory beyond VRIN resources (Seddon, 2014). Arguments also

advocate that future research on DC should focus less on establishing a relationship between DC and organizational performance, and more on the relationship between DC and leadership practices (Albort-Morant et al., 2018; Eriksson, 2014). Measuring the effects of DC has been challenging to define. In an attempt to determine the alignment between measures used in the literature and the theoretical components of the construct, Laaksonen and Peltoniemi (2016) reviewed one hundred and forty empirical studies of DC. They found that four measures reflected the degree that DC had been operationalized: self-evaluations by managers (subject to bias); financial data (investments, R&D, knowledge & learning); the organization's history and experience in dealing with change; and, the performance of individual employees. They recommend that further studies differentiate between ordinary and DC and consider the influence of the second on the first.

A longitudinal study (literature review) of empirical studies published since 1997 confirmed, based on a vote count, that DC make a positive contribution to organizational performance (Pezeshkan et al., 2016). This study also provides what could be a useful list of independent variables for use in this research study.

ii. Organizational Performance

The relationship between DC and organizational performance is explained in terms of its impact on marketing capabilities (Barrales-Molina et al., 2014), product development (Prieto et al., 2009; Schilke, 2014; Sheng, 2017; Teece et al., 1997; Zhang & Wu, 2016), process innovation (Piening & Salge, 2015), and knowledge management (Easterby-Smith & Prieto, 2008; Prieto et al., 2009). Others explain the relationship between DC and organizational performance in terms of the influence that DC have on the adoption of technology, arguing that the degree of influence is determined by factors such as entrepreneurial leadership, and capability of the organization to absorb new knowledge (Arifin, 2015). The dynamic nature of the industry an organization is associated with also has a bearing on the degree of influence that DC have on organizational performance (Fainshmidt et al., 2016).

While access to external sources of knowledge is essential for building new DC, most organizations have an extensive repository of existing knowledge both explicit and tacit that can lead to innovative improvements to organizational performance (Easterby-Smith & Prieto, 2008). Diversity of opinion and dynamic leadership capabilities is a positive differentiator of organizational performance during change (Helfat & Martin, 2015). While Wu, Chen, and

Jiao (2016) argue that international diversification promotes the creation of DC, which in turn promotes the enhancement of innovation performance.

iii. Antecedents

Antecedents are those variables that influence the creation, renewal or devolution of DC (Ambrosini & Bowman, 2009; Teece, 2007). A review of one hundred and forty-two articles provided a categorization of antecedents of dynamic capability processes into *"internal (structural and social) and external (environment and network & relationships)"* (Eriksson, 2014). They represent the predisposition of an organization to adapt and innovate to meet changing business environment.

While access to external sources of knowledge is key to a better understanding of customer needs, and availability of new technologies, most antecedents to DC are intrinsically available within organizations (Eriksson, 2014) in the form of leadership capabilities (Teece, 2007), organizational culture (Fainshmidt & Frazier, 2017), and organizational learning processes (Eriksson, 2014). Leadership capabilities primarily include cognitive abilities (Helfat & Martin, 2015; Helfat & Peteraf, 2015), entrepreneur skills (Teece, 2007, 2012), and leadership (Teece, 2007). Organizational culture relates to the *"whole of the organization's"* inherent willingness to accept and adopt beneficial change (Fainshmidt & Frazier, 2017). Organizational learning often relates to the processes of learning to learn, or how does one learn what one does not know (Easterby-Smith & Prieto, 2008).

3.2.2 Empirical Studies

Categorizing published articles on DC by type (conceptual or empirical) suggests that there is more research on the conceptual aspects of the construct rather than how the construct contributes (Eriksson, 2014) to the long-term survivability of organizations. Pisano (2016) argues that this is because researchers are addressing the wrong question and that the discussion should refocus to explore the issue of how do organizations determine what capabilities they need to build, renew, or devolve, for long-term survivability (Eriksson, 2014; Pisano, 2016). Burisch and Wohlgemuth (2016) argue that the uncertain nature of changing business environments inevitably results in imperfect knowledge, thereby making it difficult to apply a systematic approach.

Feiler and Teece (2014) provide a case study example of the processes used for the identification and building of DC in the Global Exploration Division of a major international

oil company. They conclude that DC are inherently the result of proactive leaders who take a direct interest across all processes that build, renew, or reconfigure in order to maintain survivability within complex and changing business environments.

A case study comparison of DC within four publishing businesses in Scandinavia (Jantunen, Ellonen, & Johansson, 2012) found close similarities with their sensing capabilities, but wide variations with their seizing and reconfiguration capabilities. They concluded that organizational idiosyncrasies prevail even within the same industry. A similar case study in a newspaper business (Karimi & Walter, 2015) concluded that the higher the application of disruptive technologies, in this case digital, the higher the influence of DC on organizational performance.

An empirical study of two hundred and seventeen Chinese organizations confirmed the positive relationship between DC and competitive advantage (D. Li & Liu, 2014). It concluded that the more dynamic the environment, the stronger the relationship. Control variables used in this study included the age of the organization and its size. This research project will utilize these control variables to confirm a similar effect in Saudi organizations.

i. Performance

A study of Australian industrial organizations based on longitudinal survey data supplied by the Australian Bureau of Statistics (ABS) (Galvin et al., 2014) used capability development and market development activities as independent variables to determine dependent variable sales growth. They concluded that there was a positive relationship between market development activities and organizational performance and that performance is enhanced when organizations combined existing DC with additional market development capabilities.

A study of Finnish companies operating in the food, media, and shipbuilding industries was conducted to understand how DC aided their adaptation to adverse unexpected external events (Makkonen, Pohjola, Olkkonen, & Koponen, 2014) – in this case, the global financial crisis. They established a causal continuum - DC positively affect organizational change, which positively affects innovation performance, which positively affects organizational survivability. Similar unexpected external events in a Saudi Arabian context would include dramatic drops in the market prices of commodities.

A mixed-methods study of organizations in Germany examined the value of DC in environments with varying rates of change. It concluded that the relationship is not linear, but inversely "U" shaped (Schilke, 2014). Their conclusion aligns with the findings of Eisenhardt and Martin (2000) in that the positive effects of DC are weakest in stable and rapidly changing environments; strongest in environments of moderate change; but also dependent on context.

The mixed-methods approach used in this study (Schilke, 2014) provided a useful guide for this research project. It started with qualitative interviews that identified the two activities (alliance management and new product development capabilities) most relevant to organizational capabilities to the adaptation to changing environments and adopted these as independent variables in their study. The interview data helped to refine the survey instrument that was circulated to over two thousand German companies via a commercial database (Hoppenstedt Firmendatenbank).

A study of why successful high tech companies in the United Kingdom are better than others at building and applying DC concluded that success often results in complacency in successful companies (Wang, Senaratne, & Rafiq, 2015). They argue that success can often blind companies to innovation.

ii. Marketing

A quantitative study of dyadic data collected from manufacturing international joint ventures in China and their corresponding foreign partners (Fang & Zou, 2009) resulted in the development of a conceptual model of marketing DC and concluded that marketing DC is positively related to the competitive advantage and performance international joint ventures in China.

iii. Product development

A study of empirical survey data from eighty Spanish product development projects concluded that by focusing on knowledge as an antecedent of DC in product development (Prieto et al., 2009), organizations would positively influence their product development capabilities.

Cross-sectional survey data from manufacturing and service organizations in Germany has been used to support the argument that process innovation provides higher value over product innovation (Piening & Salge, 2015). They suggest that organizational performance is

a dependent variable of innovation activities in operational processes, but warn of the potential negative relationship between having too many innovations and performance.

iv. Knowledge & learning

Dynamic capability processes rely on the generation of knowledge from internal and external sources, the integration of knowledge or sense-making of new knowledge, and the reconfiguration of knowledge (Prieto et al., 2009). Sources of knowledge should be extensive and inclusive of all employees to ensure a complete organizational body of knowledge that will positively influence DC (Nieves & Haller, 2014). Knowledge is not always acquired sequentially and is often developed through *"concurrent learning"* processes. For example, a case study spanning twenty years of acquisitions, joint ventures, and divestitures by Dow Chemical (Bingham, Heimeriks, Schijven, & Gates, 2015) concluded that concurrent learning is associated with changes to organizational structure. A study of two hundred and fifty-four small professional organizations in Norway (DØving & Gooderham, 2008) concluded that the contribution of knowledge and learning on DC is influenced by the diversity of the workforce, the internal learning processes, and the degree of collaboration with corresponding organizations.

v. Leadership

The cognitive skills to see the potential of opportunities, threats and risk, and the ability to derive compensating strategies, make unbiased, timely decisions, and to galvanize internal resources to deal with change is the paramount leadership skills required to positively influence DC (Eriksson et al., 2014; Helfat & Peteraf, 2015). The cognitive skills of leaders play an essential role in innovation processes. They are reflected in a conceptual framework that was used in a case study of small to medium companies in the Australian construction industry (Gajendran, Brewer, Gudergan, & Sankaran, 2014). However, they concluded that the results of their study were too specific to the case study participants and could not be generalised for all cases.

How innovative leadership aids in the adoption of innovative change was analysed in a case study of two hundred and sixty-four Chinese organizations (H.-F. Lin et al., 2016). Their study identified the constraints of measuring the effects of DC and recommended the use of longitudinal data rather than cross-sectional data.

As organizational leaders, the role of Chief Executive Officers (CEOs) is critical to how well the organization adapts to changing environments (von den Driesch, da Costa, Flatten, & Brettel, 2015). The study examined survey data derived from the German Chamber of Industry and Commerce database on more than two hundred CEOs of German companies to determine the relationship between CEO attributes (age, tenure, commitment to DC, and support of employees) on DC (marketing, R&D, and production) (von den Driesch et al., 2015). Their study presented an inverted "U" relationship between CEO age and DC, suggesting that younger and older CEO were less effective at managing change, and a positive linear relationship between CEO tenure and commitment to DC, and change (von den Driesch et al., 2015).

vi. Culture

A quantitative analysis of survey data from two hundred and nine organizations in Israel concluded that organizational climate has a positive influence on the three dynamic capability processes of sensing, seizing, and reconfiguration (Fainshmidt & Frazier, 2017). They conclude from this study that the *"social fabric"* of organizations is critical for developing DC. They also argue that senior managers can negatively influence an organization's willingness to change by suppressing critique of the current position - *"program persistence bias"* (Teece, 2007, p. 1327).

Given the perception of a prevailing coercive leadership style, this research project will highlight whether the leadership practices in Saudi organizations encourage the participation of all employees in discussions on sensitive matters such as potential opportunities, threats, and risks that could affect the *status quo*.

3.2.3 Analysis of studies

The literature generally falls into two camps, followers of the original work of Teece, Pisano, and Shuen (1997) and followers of Eisenhardt and Martin, (2000). A dominant difference is Eisenhardt and Martin's assertion that DC are best practices that can be replicated.

Debate on the concept of the DC framework has advanced from its original focus on the economic survivability of organizations grounded in economic theories such as the resource based view scarcity-based approach. Discussions in the literature advanced the importance of entrepreneurial managerial behavioural, and the critical nature of knowledge to

DC. The application of the DC framework by scholars in different disciplines has in many ways contributed to a haze of ambiguity and confusion.

Empirical studies fall into two categories, those that advance the discussion of the contribution of the DC framework on specific organizational outcomes, such as performance, market share, and product development, and those that advance the discussion on the influence that knowledge, leadership, and organizational culture have on DC. The author's interpretation of DC used in empirical studies influences the generalizability of their study findings.

3.3 Gaps in the literature

There is inadequate research on the application of DC framework in Saudi Arabia. This research project aims to address the gap in the literature on empirical studies of DC in a Saudi Arabian context and on the relationship between dynamic capability processes and antecedents for dynamic capability building.

Given the proclivity towards coercive leadership styles (Williams, 2008), and the strong power distance and masculinity culture (Bjerke & Al-Meer, 1993; Hofstede, 1980, 2011) in Saudi Arabian organizations, the findings from this research project on the influence of these antecedents on DC, should prove valuable to theorists and practitioners alike.

In the original work on the DC framework, the authors (Teece et al., 1997) chose not to elaborate extensively on the causal relationships between antecedents (organizational culture, organizational learning, and leadership capabilities) and DC. They did, however, emphasise that because *"these fields are often viewed as outside the traditional boundaries of strategy, [and] …. not been incorporated into existing economic approaches to strategy issues"* (Teece et al., 1997, p. 511), the construct offered a *"potentially integrative approach to understanding the newer sources of competitive advantage"*. The research focus on the construct at this stage was primarily on strategic planning/management. However, a divergence of opinion appears in the literature, on DC, their role and their definition, with Eisenhardt and Martin (2000) arguing that DC are not vague but are *"a set of specific and identifiable processes such as product development, strategic decision making, and alliancing"*. Contrary to Teece's view on the *'idiosyncratic'* nature of DC differentiating organizations and enabling competitive advantage, Eisenhardt and Martin (2000, p. 1106) claim that DC have commonality across organizations and are at best only *'best practice'*.

In his next major work on the construct, Teece (2007) expanded the framework by decomposing the original managerial and organizational processes into three *'clusters'* of processes labelled – sensing, seizing, and reconfiguration. In this work, Teece (2007) emphasises the importance of knowledge (and organizational learning) from both internal and external sources. However, he provides little on the role of organizational culture and leadership capabilities, arguing, *"there is already an extensive literature on culture, commitment, and leadership, these issues are not discussed further"* (Teece, 2007, p. 1334).

Further publications continued the discussion on the construct. They sought to provide a definitive definition of DC, how can they be measured, how do organizations know they have them, and how do organizations measure their influence on long-term survivability. However, as Barney, Ketchen, and Wright, (2011) argue, advancing a construct towards a theory requires more than several conceptual papers, but is dependent on the availability of credible empirical studies supported by rigorous methods.

Pisano (2016) observed the increased interest in the DC framework but argued that most authors were deviating from the strategic issues relating to how organizations decide on what capabilities they need to acquire or build to enhance or maintain their competitive advantage.

The discussion on the DC framework continues unabated in the literature to this day. For example, in the last four years, there have been at least ten new articles published by the seminal author David J. Teece, expanding the underlying theories of the DC framework and the coevolution of DC and its antecedents. In his recent work, Teece has addressed the entrepreneurial organization and entrepreneurial management (Teece, 2016, p. 202), organizational agility and DC (Teece, Peteraf, & Leih, 2016), DC and effective business models (Teece, 2018a, p. 48), DC and management theory (Teece, 2018b). In his published work, Teece explains in detail the contribution that knowledge and leadership have on DC. However, there is little discussion on organizational culture other than the assumption that organizations should have *"a change-oriented organizational culture and a prescient assessment of the business environment and technological opportunities"* (Teece, 2017, p. 698).

The systematic literature review revealed an absence of any empirical studies of DC in Saudi Arabia. This study is the first empirical study examining how Saudi organizations identify and build DC. Previous studies have explored the influence that each of the

antecedents individually has on DC, but this study examines the collective influence of all the antecedents on DC. Saudi organizations have typically conducted individual programs for each of the antecedents. The weakness in running these programs in 'silos' is that participants do not see the relationships between leadership and culture, leadership and learning, and culture and learning. This study examined organizational culture, organizational learning and leadership capabilities as a collective set of antecedents to DC. This research study has contributed towards filling the current gap in the literature covering the application of DC within a Saudi Arabian context.

The antecedents (organizational learning, organizational culture, and leadership capabilities) are so tightly integrated that it is challenging to consider one concerning DC at the exclusion of others (Bock, Opsahl, George, & Gann, 2012; Duarte Alonso, Kok, & O'Shea, 2018; Easterby-Smith & Prieto, 2008, p. 245; Fainshmidt & Frazier, 2017; Fainshmidt et al., 2016; Lawson & Samson, 2001; Nonaka, Hirose, & Takeda, 2016).

Chapter 4 Developing a Conceptual Dynamic Capabilities Framework

The purpose of this chapter is to build a potential solution to the research aims and objectives based on the DC framework that the literature review identified. The DC framework presented by Teece, Pisano, and Shuen (1997) is the theoretical basis for this research.

4.1 Dynamic Capabilities Framework – Teece (2007)

The original framework established by Teece, Pisano, and Shuen (1997) consisted of three components, position, processes (managerial and organisational), and pathways. Teece (2007) enhanced the framework and defined the processes as three clusters of processes sensing (scanning), seizing, and, reconfiguration. The following sections describe the enhanced version of the framework, which forms the basis for this research project.

4.1.1 Sensing process

The sensing process is entrepreneurial (Foss & Lyngsie, 2014; Teece, 2014a; Zahra et al., 2006), its role is to scan the market and technologies for opportunities that could be advantageous to the organization (Teece, 2014a). Gathering information and critical analysis is a critical component of the sensing process, therefore sensing capabilities include the ability to learn and the ability to make contextual sense of new knowledge and, what it means to the organization. This process aims to filter new knowledge and frame new opportunities. The elements of the sensing process include analytical systems (big data); processes for prioritizing internal research and development initiatives (internal R&D); processes for selecting new and disruptive technologies (for example, automation of mining operations); processes for identifying changing customer needs; processes for leveraging off innovations developed by suppliers and service providers; and, processes for leveraging off innovations in science and technology from external sources (for example, universities) (Pisano, 2016; Teece, 2007).

The outputs from the sensing process include an assessment of opportunities and threats framed in such a manner that they make "sense" or relevance to the organization (Helfat & Peteraf, 2015; Jantunen, Ellonen, & Johansson, 2012; Lin, Su, & Higgins, 2016; Teece, 2007). Not every opportunity and threat requires management consideration and attention (Teece, 2007). The effectiveness of this process is influenced by whether it is performed by a discrete entity within the organization or involves key people from a cross-

section of the organization thereby ensuring the inclusion of all knowledge about the organization's position, its capabilities, and potential opportunities (Teece, 2007).

4.1.2 Seizing process

The role of the seizing process is to address opportunities and make the necessary investment decisions at the appropriate time to realise the full potential of the opportunity. Teece (2007) argues that a merging of the sensing and seizing processes within an organization is a common practice, primarily because innovative opportunities are likely to challenge corporate norms and foster adverse reactions. The personal observations of the Researcher, drawn from years of work experience in Saudi Arabia, support the view that the capability of management to dispense with established decision-making rules and procedures is a significant obstacle to seizing new opportunities (Helfat & Martin, 2015; Helfat & Peteraf, 2015). For example, procurement procedures can lead to compromises in the acquisition of new technology and lead to the preservation of older and in many cases, obsolete technologies (Vanpoucke et al., 2014).

A significant obstacle confronting organizations is recognizing the potential and importance of opportunities and threats and seizing them. History has many examples of *"too big to fail"* organizations that did not survive because of their reluctance to change. Constraints to seizing opportunities include inertia, or *"program persistence bias"* (Teece, 2007, p. 1327) – the continuance of funding for programs beyond their usefulness; and, anti-innovation bias by leaders who are unwilling to disturb the status quo for fear of losing their importance (Dong, Garbuio, & Lovallo, 2016; Felin & Powell, 2016; Powell, Lovallo, & Fox, 2011). Organizational structure is also a significant impediment to strategic capability decision making. As most organizations in Saudi Arabia follow a *"command and control"* structure, the importance and relevance of opportunities identified through sensing and scanning is often filtered, and lost by the time the opportunity is presented to the critical decision makers – those with the authority to approve the necessary investment (Helfat & Peteraf, 2015; Hermano & Martín-Cruz, 2016; Laaksonen & Peltoniemi, 2016; Ringov, 2017). Organizations in Saudi Arabia are also *prima facie*, very conservative and risk-averse. Therefore, their management will adopt the *"best practices"* being followed by the exemplary organizations, such as their national oil and gas company – Saudi Aramco.

Seizing capabilities are described as Schumpeterian (Teece, 2007; Winter, 2003) in that innovation is the primary reason for increased investments, and changes to organizational

structures, routinized procedures, and incentives for seizing opportunities are the hub of the seizing capabilities (Makkonen et al., 2014; Peteraf et al., 2013; Teece, 2007; Teece et al., 1997). Another critical element of seizing capabilities is the avoidance of bias, delusion, deception, and hubris in decision making (Teece, 2007). Overcoming these major contributors to investment decision making errors requires organizational structures that form the essential incubators and catalysts for innovation; and, institutionalised procedures for shedding non-value adding assets and routines (Dixon et al., 2014; Schilke, 2014; Teece, 2014a, 2018a; Zhang & Wu, 2016).

The seizing process requires leadership capabilities that recognize potential bias issues and can build loyalty and commitment from the workforce, while at the same time, balance the demands of those with a stake in maintaining the *status quo* and those interested in the growth and survivability of the organization (Fainshmidt & Frazier, 2017; Karimi & Walter, 2015; Sicotte, Drouin, & Hélène Delerue, 2014; Teece, 2007).

The seizing process requires capabilities to continually build and re-build the organization's business model to accommodate revised technology and product architecture brought on by new products, and changing customer needs (Teece, 2007, 2018a).

The outputs from the seizing process are decisions to either reject or approve further action on the opportunity or threat identified in the sensing process. Approval decisions should be made based on a pathway towards achieving strategic capability and provide ample authority for investments in new technologies, business models, and resources. The profitable growth of an organization is a function of its capability to identify opportunities, both technological and market, and move forward with a combination of the right selection of technologies, products, business model, and financial investments.

4.1.3 Reconfiguration Process

The role of the reconfiguration process is to ensure that the organization is continually *"fit-for-purpose"* (Teece, 2007), in that the organization is evolving along the correct path to acquiring the strategic capability that fits its operating environment. Central to the reconfiguration process is the notion of continuous alignment and realignment of the organisation's resources, both tangible and intangible.

Every transformation does not need to be radical, in most cases, reconfiguration should be evolutionary, thereby avoiding the potential for failure brought on by excessive and

dysfunctional changes to routines (Teece, 2007). Furthermore, change is costly and requires a high degree of trust within the organization (Fainshmidt & Frazier, 2017) to gain acceptance. Incremental adoption of change has less risk as it requires only a gradual and more readily accepted modification to routines, and organizational structures.

Management leadership capabilities have a significant influence on this process. Firstly, to overcome a tendency of established organizations to limit their search for new opportunities to those that exploit existing resources. Secondly, to overcome existing knowledge and problem-solving practices (Teece, 2007, 2018a). Management also needs to counter the filtering effect that results from traditional "command-and-control" structures with "Top-Middle-Lower" levels. These structures reinforce employee loyalty to their supervisor at the expense of their customers (Fainshmidt & Frazier, 2017; Teece, 2007).

How an organization acquires, retains, and utilizes knowledge is also a significant influence on this process. Other elements of knowledge management include how an organisation learns (Schwandt & Marquardt, 1999), its knowledge transfer practices, how it integrates its knowledge into its operations, and finally how it protects its intellectual property.

Fainshmidt, Wenger, Pezeshkan, and Mallon, (2019, p. 758) argue that competitive advantage is contingent on a configurable view of DC that is dependent on the strategic fit of the organization's resources. Strategic fit relates to an organisation's ability to match its resources and capabilities with opportunities, threats and risks presented by its external business environment (Zajac, Kraatz, & Bresser, 2000, p. 429). Internal knowledge sharing of potential opportunities for combining existing resources, routines, and structures is critical to managing strategic fit (Bloodgood, 2007, p. 40). Examples include improving organizational performance by utilizing the waste from one manufacturing process as inputs to another manufacturing process and, commonality of parts.

4.2 A conceptual framework and hypotheses

The conceptual framework that forms the basis of this research project comes from the dynamic capability framework presented by Teece, Pisano, and Shuen (1997) and adapted by other authors (DØving & Gooderham, 2008; Eriksson et al., 2014; Fainshmidt & Frazier, 2017; Y. Lin & Wu, 2014; Pisano, 2016; Teece, 2007, 2012, 2014b).

This framework reflects the pathway that an organization might take as it continually evolves from its current position, to meet the needs and expectations of its customers. The conceptual model includes the three major components of the original (Teece, 2007; Teece et al., 1997) in that it includes position, processes, and a pathway.

The difference between the conceptual framework and most frameworks relating to DC is the focus of the conceptual framework on the antecedents to the three managerial and organizational processes: sensing, seizing, and reconfiguration. The literature includes many discussions (Albort-Morant et al., 2018; Peteraf et al., 2013) on defining DC and explaining their benefits. However, there is very little empirical work on how these processes perform in practice (Pisano, 2016); or, the influence that the antecedents to these processes have, either directly or indirectly. All antecedents presented in Figure 4.1 (page 35), influence each of the processes: sensing, seizing, and, reconfiguration, along the path, but to varying degrees.

4.2.1 Antecedents

The literature identified the six antecedents in the conceptual framework; however, the bias of the Researcher is also evident. The argument is that these antecedents are so critical to the DC framework that they require special attention. However, further testing of the conceptual framework may highlight other, more influential antecedents. Determining any priority between these antecedents is made difficult by the high level of interdependency between them. Testing the conceptual framework in Saudi Arabia will go some way towards identifying the priority of the antecedents within that context.

i. **Leadership Capabilities**. Leadership capabilities feature prominently in the DC framework literature. For example, Helfat and Peteraf (2015) argue that leaders with strong *"paradoxical cognition"* are better at balancing the conflicting forces often encountered in making investment choices. While (Teece, 2007, 2012; Teece et al., 2016), argue the importance of entrepreneurial leadership in confronting the inertia of existing systems and practices that support maintaining the status quo. Ambrosini and

Bowman (2009) argue that leadership often involves the strength to make new commitments and break existing obligations where necessary, and the wisdom to balance between retaining the status quo and adopting potentially costly and potentially risky radical change (Peteraf et al., 2013). Teece and Leih (2016) argue that leaders must be capable of making fact-based decisions and negotiating growth pathways (Makkonen et al., 2014) with Stakeholders. Leadership capabilities are critical in the acquisition of new resources and the divestment of resources that are no longer relevant. Therefore leaders must be capable of making new commitments and disengaging from earlier commitments (Ambrosini & Bowman, 2009).

ii. **Organizational Learning**. In discussions in the literature, the terms "dynamic capabilities" and "knowledge management" are referred to consistently as precursors to organizations surviving in changing business environments (Easterby-Smith & Prieto, 2008). Most of the valuable resources within an organization relate to the possession of knowledge, the acquisition of new knowledge, and the dissemination of knowledge. The literature recognizes knowledge as the predominant influence on competitive advantage (Wohlgemuth & Wenzel, 2016). Management's role is to foster the acquisition of new knowledge from internal and external sources; make sense of new information by relating it to the context of the organization; and, ensure the dissemination of new knowledge throughout the organization where it can be most useful (Marquardt, 2002; Schwandt & Marquardt, 1999; Zollo & Winter, 2002).

iii. **Organizational Culture**. Leadership and trust are essential in creating an organizational climate conducive to learning, the use of DC, and the creation of resources in general (Ambrosini & Bowman, 2009; Karimi & Walter, 2015; Schneider, Ehrhart, & Macey, 2013). Organizational culture is a determinant of "first-order" DC in that it can be a constraint or a barrier to innovation depending on the shared organizational values, norms and practices (Karimi & Walter, 2015). Organizational culture can help to gain acceptance to change, making the adoption of innovation seem like standard practice (Zahra et al., 2006).

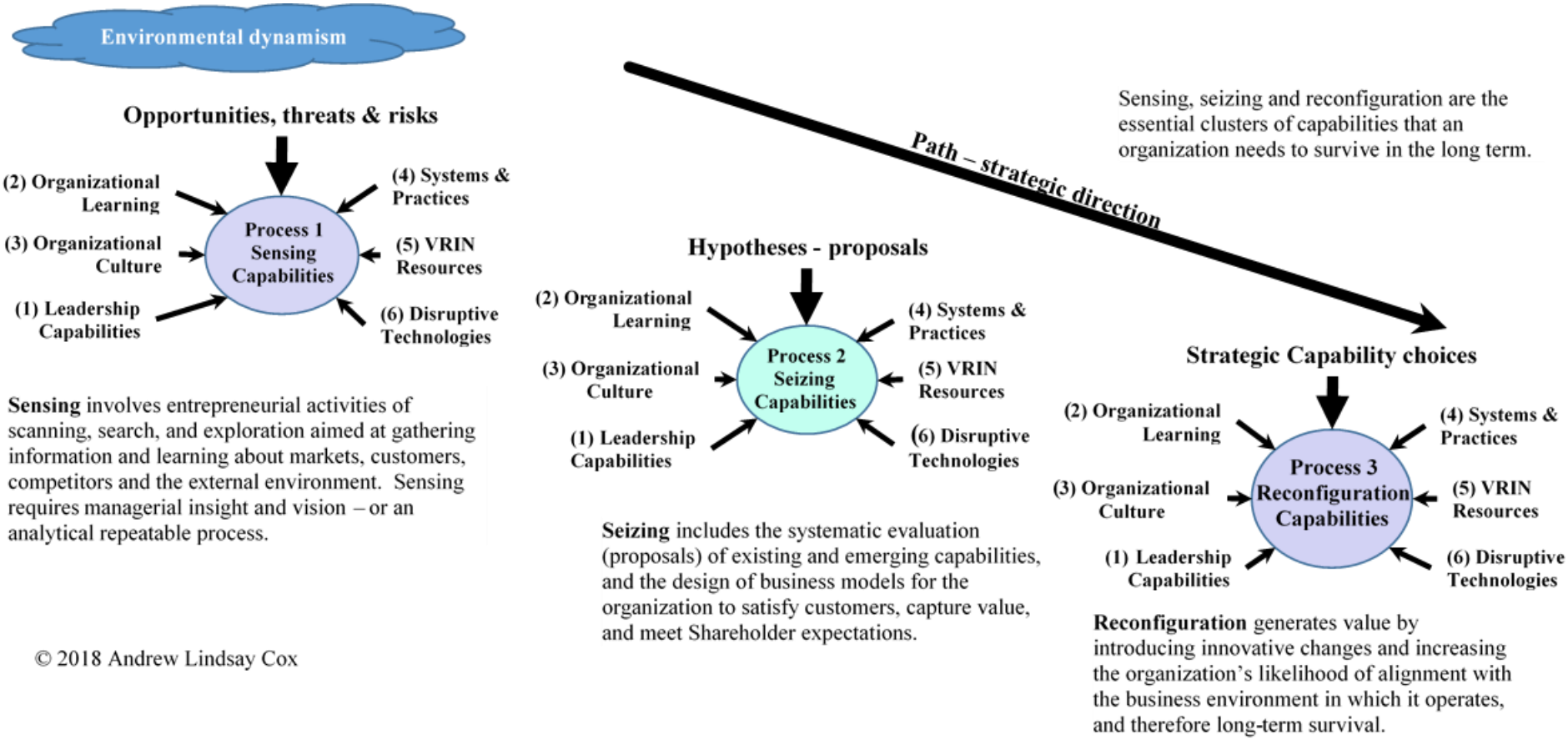

Figure 4.1 - Dynamic capabilities and dominant enablers

4.2.2 Relationships between antecedents, dynamic capabilities and long-term survivability

A criticism of the DC framework is the tautology that DC are capabilities for building capabilities (Barrales-Molina et al., 2014; Di Stefano et al., 2014; D. Li & Liu, 2014; Schweizer et al., 2015; Zollo & Winter, 2002). That organizational performance is derived entirely from the possession of DC, or vice versa (Laaksonen & Peltoniemi, 2016; Prieto et al., 2009; Zahra et al., 2006); or, that a measurement of DC equates to a measurement of organizational performance (Ambrosini & Bowman, 2009; Helfat & Martin, 2015). These issues are avoided in the conceptual framework by including the relationships (Figure 4.2 below) between a selection of pre-existing internal antecedents, DC, and outcomes (Eriksson, 2014; Zahra et al., 2006). Long-term organizational survivability is a dependent variable reliant on a collection of variables including durable organizational performance and the consistent achievement of organizational targets, including profitability, market share, customer satisfaction, and competitive advantage.

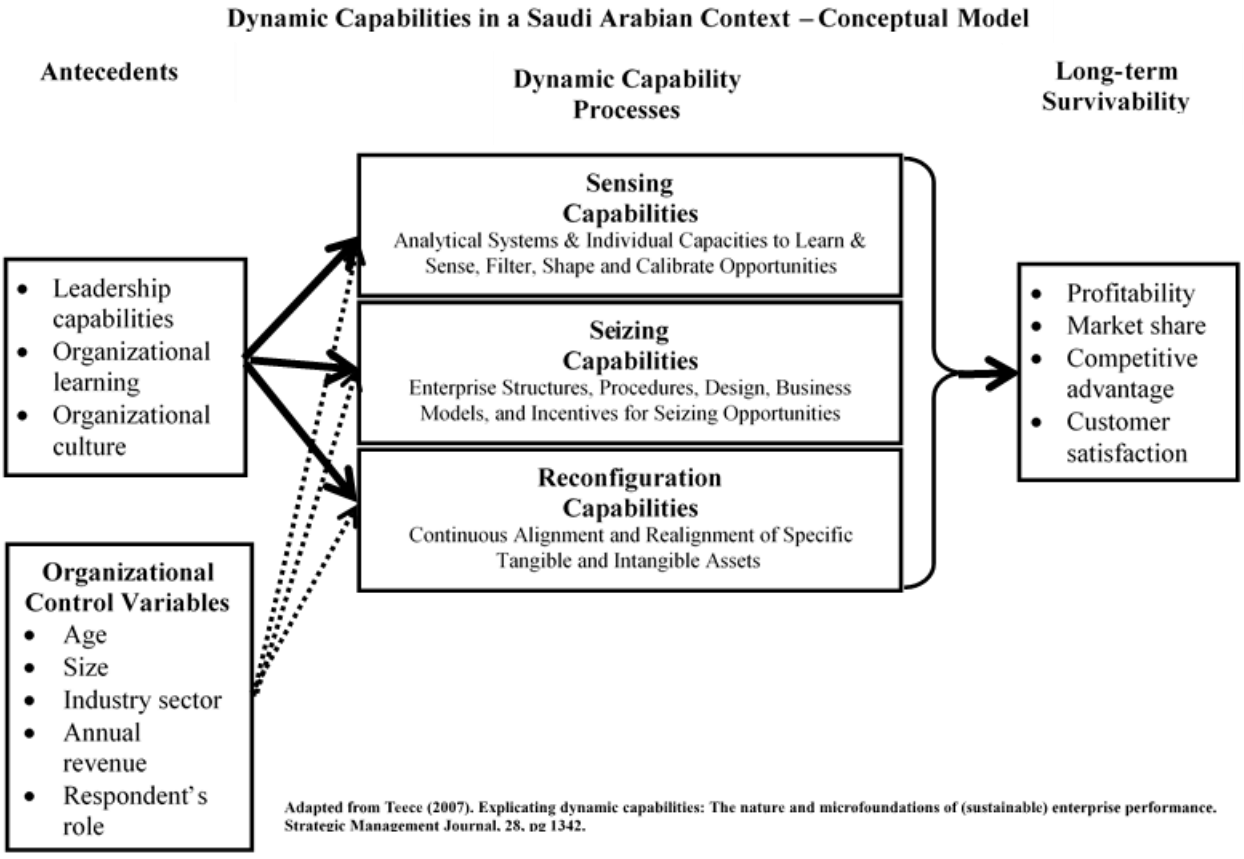

Figure 4.2 - Relationships of antecedents, dynamic capabilities, and long-term survivability

4.2.3 Enablers and Dynamic Capabilities Relationship

The readiness, willingness, and ability of organizations to build DC are influenced (Ambrosini & Bowman, 2009) by the existence of internal capacities, such as leadership skills; organizational learning systems; and organizational culture (Eriksson, 2014; Teece, 2007). These form the building blocks of DC if managed appropriately (Wang et al., 2015). Variations of these antecedents apply to each of the DC: sensing, seizing, and reconfiguration (Eriksson, 2014; Teece, 2007; Zahra et al., 2006). For example, the acquisition of knowledge through either experience or goal-based learning, the retention and dissemination of accumulated corporate and individual knowledge, and the application of knowledge, all contribute to some degree to sensing, seizing, and reconfiguration DC (Zollo & Winter, 2002).

The DC framework advocated by Teece (2007) assumes the existence of individual and organisational learning capacities; and, the analytical systems and practices to identify and make sense of opportunities (Eriksson, 2014; Teece, 2007). Likewise, there is an assumption that the organization holds internally the leadership capacities that encourages a culture that accepts change, and a willingness to adjust organizational structures and business models to support the building of seizing capabilities (Eriksson, 2014; Teece, 2018a). Concerning reconfiguration capabilities, leadership skills, organizational learning, organizational culture, are all critical enablers to do what Teece (2007) describes as the *"continuous alignment and realignment of specific tangible and intangible assets".*

4.2.3.1 Leadership capabilities

Leadership capabilities in a DC context relate to those behavioural and cognitive skills, and perceptions that an organization's management (Ambrosini & Bowman, 2009; Fainshmidt & Frazier, 2017; Helfat & Peteraf, 2015) exercises *"to create, extend, and modify the ways in which firms make a living"* (Helfat & Martin, 2015). In essence, the existence of these internal skills forms the relationship between leadership decisions, strategic change, and organizational performance (Helfat & Martin, 2015).

The entrepreneurial capability of leaders is an essential antecedent of DC (Jantunen et al., 2012). In addition to contributing to sensing and seizing opportunities, an entrepreneurial orientation of leaders contributes, over time, to the reconfiguring of knowledge and VRIN resources (Jantunen et al., 2012; Teece, 2014a). Cognitive capabilities, entrepreneurial orientation and cultural awareness are central to the antecedent leadership capacities of DC (Eriksson et al., 2014). Arifin (2015) argues that entrepreneurial leadership capabilities have a

direct relationship with technology adoption, which positively influences organizational performance. Entrepreneurial leadership capabilities influence the procurement of resources, the recruitment of skills, and frame organizational learning and processes for capturing new knowledge (Zahra et al., 2006).

An essential aspect of effective leadership is the ability to continually aligning organizational capabilities with opportunities, threats, and risks. Sensing is the integral dynamic capability aimed at achieving the required level of alignment. However, it requires innovation-conscious and entrepreneurial leadership that can effectively manage the continual scanning for opportunities that lead to the creation, modification, or replacement of resources. Formally stated:

Hypothesis 1a. *Leadership capabilities positively relate to the sensing capabilities of Saudi organizations.*

The effective seizing of opportunities requires strong leadership capabilities to counter the dysfunctional inertia and anti-innovation bias of existing structures that protect and exploit existing programs, for example, *"program persistence bias"* described by Teece (2007, p. 1327). Program persistence can lead organizations into continuing to build redundant capabilities that provide limited if any returns on investment. Leaders need to be cognisant of *"success traps"* described by Wang et al. (2015), and be able to recognize that capabilities that contributed to past successes might not be relevant to the changing situation. Leaders need the skills to be able to override established practices, decision rules and resource allocation processes that could, for example, prevent the procurement and adoption of new technology. Formally stated:

Hypothesis 1b. *Leadership capabilities positively relate to the seizing capabilities of Saudi organizations.*

The complexity and interdependency of transformational issues that arise require that managers possess highly developed leadership skills (Fainshmidt & Frazier, 2017). Although reconfiguration is the pathway that organizations follow in order to maintain long-term fitness, it does, however, involve potential risk and changes to routines can lead to anxiety (Fainshmidt & Frazier, 2017; von den Driesch et al., 2015). Therefore, leaders need capabilities to manage risk, uncertainty and counter anxieties (Teece, 2007, 2012, 2014b; Teece et al., 2016). Formally stated:

Hypothesis 1c. *Leadership capabilities positively relate to the reconfiguration capabilities of Saudi organizations.*

The argument here is that the entrepreneurial and leadership skills of an organization's management in sensing, seizing and reconfiguration processes, is an essential requirement (Arifin, 2015) to sustain DC and long-term organizational survivability (Teece, 2012). Teece (2012) argues that the most crucial leadership function is to design, develop and maintain processes that through routine execution, almost automatically result in asset creation, renewal, and disposal, with minimal internal distress but the maximum benefit to the organization and external stakeholders (Teece, 2012). The entrepreneurial leadership skills referred to here by Teece (2012), are not those generally associated with people who start up a new business. In this context (dynamic capabilities), entrepreneurial leadership skills include the ability to understand changes in the organization's operating environment, make sense of what it means to the organization, and to initiate innovative ways of improving and change (Arifin, 2015; Teece, 2012). In essence, entrepreneurial leadership is the ability to focus on determining the next major threat, risk or opportunity, and deciding on the best way to address them (Teece, 2012).

Wise leadership, one that exercises practical judgment, practical wisdom, common sense, and far-sightedness (phronetic), is considered to be the foundation of strong DC (Teece, 2014b). However, without the right leadership skills, DC can be weak (von den Driesch et al., 2015), and prove dysfunctional (Helfat & Peteraf, 2015; Teece, 2007). Weak DC risk damaging an organization's long-term survivability, in which case taking no action is the preferable option (Teece, 2014b). Formally stated:

Hypothesis 1d. *Leadership capabilities have a positive indirect relationship with the long-term survivability of Saudi organizations through the dynamic capabilities of sensing, seizing, and reconfiguring.*

4.2.3.2 Organizational Learning

The acquisition of knowledge and capabilities are the co-dependent outcomes of an organization's learning processes (Eriksson, 2014; Schwandt & Marquardt, 1999). How an organization creates knowledge, accumulates knowledge, and renews knowledge (Zollo & Winter, 2002) is a prerequisite for building DC (Easterby-Smith & Prieto, 2008; Eriksson, 2014). Organizational learning involves rational and focused investments of time and funds in a mix of learning activities that help define and build DC (Bingham et al., 2015; Zollo &

Winter, 2002). Research indicates that highly deliberate goal-based learning processes are more likely to satisfy the knowledge requirements of an organization (Zollo & Winter, 2002).

Capturing knowledge about new technologies and market opportunities, making sense of what it means to the organization, and disseminating it to the right people in the organization is a critical aspect of an organization's sensing capabilities (Eriksson, 2014; Felin & Powell, 2016; Teece, 2007). Organizational learning focuses on determining sources of new knowledge (internal or external) (Bingham et al., 2015; Eriksson, 2014; Teece, 2007), deciding who should be collecting new knowledge (senior management, central entity, or anyone) (Eriksson, 2014; Felin & Powell, 2016), encouraging people to share new knowledge (Felin & Powell, 2016), and, discovering changing customer requirements and new opportunities (Felin & Powell, 2016; Teece, 2007, 2014b). Formally stated:

Hypothesis 2a. *Organizational learning positively relates to the sensing capability of Saudi organizations.*

Seizing opportunities invariably entails an organization making fact-based and unbiased investment decisions that involve some form of change and disruption to the *status q*uo (Teece, 2007). To be effective, seizing capabilities rely on organizational learning processes that provide the knowledge and capabilities necessary to support a 'change' culture that facilitates open challenges to current business processes, organization structures, business models, and practices and procedures. Organizational learning includes the accumulation of knowledge gained from previous opportunities (Bingham et al., 2015), irrespective of whether the opportunities were rejected or accepted (Eriksson, 2014; Felin & Powell, 2016; Teece, 2007). Formally stated:

Hypothesis 2b. *Organizational learning positively relates to the seizing capability of Saudi organizations.*

Reconfiguration activities are managed typically as projects (H.-F. Lin et al., 2016). Consequently, the focus of organizational learning processes during reconfiguration shifts towards the accumulation of knowledge gained from these change projects (Easterby-Smith & Prieto, 2008) and the integration of new knowledge into organizational capabilities (H.-F. Lin et al., 2016). Reconfiguration projects are exploitive and explorative of knowledge (Sheng, 2017) in that they utilize existing knowledge held within the organization while concurrently accumulating new knowledge externally and experientially (Easterby-Smith & Prieto, 2008; Zollo & Winter, 2002). Formally stated:

Hypothesis 2c. *Organizational learning positively relates to the reconfiguration capabilities of Saudi organizations.*

Organizational experiences that infrequently occur, for example, major expansions of production plants, tend to result in the loss of tacit knowledge, due primarily to the turnover of employees that occurs during the interim period (Easterby-Smith & Prieto, 2008; Zollo & Winter, 2002). In these situations, organizational learning is more influential in developing DC when it includes explicit processes for retaining tacit knowledge, maintaining the corporate 'body of knowledge' repository, and disseminating knowledge (Zollo & Winter, 2002).

Routinizing the sharing of the corporate body of knowledge, through organizational learning processes, becomes critical to developing DC in situations where there is a high diversity of experiences and disaggregation of knowledge (Zollo & Winter, 2002).

Reliable and repeatable organizational learning processes become imperative in situations where there is a significant distance between the execution of a task and an understanding of its contribution towards achieving organizational performance targets. Careful articulation of this relationship is necessary in developing DC compared to a reliance on tacit knowledge of past experiences (Zollo & Winter, 2002). Formally stated:

Hypothesis 2d. *Organizational learning has a positive indirect relationship with the long-term survivability of Saudi organizations through the dynamic capabilities of sensing, seizing, and reconfiguring.*

4.2.3.3 Organizational Culture

Organizational culture influences the expectations that people, within an organization, have on the motives, intentions, and predictable actions of others; including shared responsibility for failures as well as successes (Fainshmidt & Frazier, 2017). The existence of a stable organizational culture will foster collaborative and collegial workplace behaviours (Colquitt, Scott, & LePine, 2007; Dirks & Ferrin, 2001) that will facilitate information sharing and lead to shared commitments, acceptance of new ideas and innovations, and foster a willingness to change (Collins & Smith, 2006; Stahl, Larsson, Kremershof, & Sitkin, 2011).

For example, organizations should continually scan and explore a wide range of internal and external sources in order to discover and make sense of new opportunities. However, an organizational culture that limits discovery to existing technologies, markets, and

problem-solving methods will constrain the identification of risk, threats and opportunities to the organization (Teece, 2007). An organizational culture that positively encourages sensing DC will encourage the exchange of ideas among employees without fear of reprisals for threatening the *status quo* (Fainshmidt & Frazier, 2017). Formally stated:

Hypothesis 3a. *Organizational culture positively relates to the sensing capabilities of Saudi organizations.*

An organizational culture positively attuned to the acceptance of new ideas and change will encourage the exchange of new ideas amongst its employees and shareholders, thereby building a preparedness of employees to depend on the advice of their colleagues (Helfat & Peteraf, 2015). An organizational culture that positively encourages the adoption of new ideas will facilitate constructive leadership consensus on investment decisions to avoid the dysfunctional bureaucratic practices that can lead to the continuation of funding for programs beyond their usefulness (Teece, 2007) and the limiting of funding for new initiatives. Hence, many organizations may sense a risk, threat or opportunity but fail to respond effectively (Teece, 2007). Formally stated:

Hypothesis 3b. *Organizational culture positively relates to the seizing capabilities of Saudi organizations.*

An organizational culture that fosters a collaborative and collegial environment of trust will benefit from the sharing of tacit knowledge accumulated from previous interventions (Zott, 2003). Reconfiguration capabilities involve the adaptation, integration, and redeployment of assets and operational capabilities (Helfat & Peteraf, 2015). The corporate 'body of knowledge' stored in the minds of employees can facilitate higher levels of commitment to change (Michaelis, Stegmaier, & Sonntag, 2009), and enhance collaborative efforts in effectively and efficiently implementing change (McEvily, Perrone, & Zaheer, 2003; Sirmon, Hitt, & Ireland, 2007), and becomes essential to ensuring effective coordination across intra-organizational boundaries and smooth implementation of reconfiguration interventions (Teece, 2007, 2014b; Teece et al., 2016). Formally stated:

Hypothesis 3c. *Organizational culture positively relates to the reconfiguration capabilities of Saudi organizations.*

Organizational cultures that encourage experimentation, and risk-free challenges to the *status quo* (Baer & Frese, 2002) play an essential role in achieving long-term organizational

survivability (Hansen & Wernerfelt, 1989; Huff & Kelley, 2005; Ray, Barney, & Muhanna, 2004). However, while research might suggest a positive correlation between organizational culture and long-term organizational survivability (Hansen & Wernerfelt, 1989; Huff & Kelley, 2005), the pathway towards long-term organizational survivability includes other enablers (Fainshmidt & Frazier, 2017; Teece, 2007, 2014b). Formally stated:

Hypothesis 3d. *Organizational culture has a positive indirect relationship with the long-term survivability of Saudi organizations through the dynamic capabilities of sensing, seizing, and reconfiguring*.

4.2.4 Control Variables

The argument for including control variables in the conceptual framework is to help explain other relevant influences on DC. An organization's age can present *paradoxical tensions* (Yeow, Soh, & Hansen, 2018) of rigidity and inertia inhibiting adaptability (Teece, 2007, 2014b). However, with age, the organization's processes could be better understood and complied with by all stakeholders (Burisch & Wohlgemuth, 2016). Another paradox is the organization's size in terms of the number of employees. From one perspective, it could indicate greater availability of resources to participate in dynamic capability building activities; however, size could also indicate more bureaucracy and less of the entrepreneurial spirit and readiness to change related to DC (Fainshmidt & Frazier, 2017; Teece, 2014a). DC are also dependent on the type of industry related to the organization (Eisenhardt & Martin, 2000). Industries that experience radical fast-paced change are more likely to have more substantial DC (Barrales-Molina, Bustinza, & Gutiérrez-Gutiérrez, 2013; Barrales-Molina et al., 2014; D. Li & Liu, 2014).

An organization's focus on annual revenue could indicate an emphasis on stability, the continuance of the *status quo*, and short-term organizational performance. Long-term organizational survivability, however, requires a commitment to long-term change, periods of uncertainty, restructuring, and leveraging off innovation and new knowledge (Lawson & Samson, 2001). Increased revenue and profitability are contributors to long-term organizational survivability, and are the expected outcomes from investments in innovation (Makkonen et al., 2014). The Researcher's observations suggest that the traditionally conservative nature of the management of many Saudi organizations is risk-averse, reticent to innovation, and focus on short-term gains. The new government who are motivated to increase sustainable growth and job creation is now challenging this philosophy.

The respondent's role in the organization, and their tenure within the organization and industry, is useful in explaining any response variations that are caused by a lack of knowledge, anecdotal hearsay, and incomplete understanding (Burisch & Wohlgemuth, 2016; Wohlgemuth & Wenzel, 2016).

4.2.5 Dynamic Capabilities and Long-term survivability Relationship

DC feature prominently as a contributor to long-term organizational survivability (Teece, 2014b). Although the connection between DC and organizational performance is discussed by many (Fainshmidt et al., 2016; Pezeshkan et al., 2016; Wang et al., 2015), long-term survivability requires a more sophisticated measurement than measurements that reflect performance at a single point in time. Long-term survivability is dependent on the enduring ability of an organization to operate profitably (Teece, 2007; Teece et al., 1997). Because strong DC provide the foundations necessary for sustainable competitive advantage, and hence the maintenance of profitability, DC can claim to be an integral contributor towards long-term organizational survivability (Di Stefano et al., 2014; Eriksson, 2014; Teece, 2007). Long-term organizational survivability requires more than just the traditional contributors of business success, such as ownership of tangible assets, controlling costs, maintaining quality, and optimizing inventories (Teece, 2007). Long-term organizational survivability requires that an organization be capable of dealing with change (Di Stefano et al., 2014) because competitive advantage is an elusive notion that can easily be lost when the business environment is disrupted (Di Stefano et al., 2014; Teece, 2014b). The Zero-Profit trap (Prieto et al., 2009; Teece, 2007; Wang et al., 2015) occurs when organizations have strong capabilities with their current product range and production processes, but fail to recognize when they need to innovate to meet changing customer needs (Fang & Zou, 2009; Prieto et al., 2009; Sicotte et al., 2014; Wu et al., 2016). The DC framework aids in the identification of the critical variables and relationships needed to design, develop, modify, and protect assets (Teece, 2007, 2014b, 2014a; Vanpoucke et al., 2014).

Chapter 5 Methodology

This chapter describes the research philosophy and strategies adopted by this project to fulfil the study's aims and objectives, which are:

1. To analyse the relationship between long-term survivability and the dynamic capabilities of Saudi Arabian companies.
2. To determine the theoretical foundations of dynamic capabilities
3. To develop a conceptual framework and examine previously unexplored relationships within a Saudi Arabian context.
4. To examine the key factors that drive the development of dynamic capabilities in the context of Saudi organisations.
5. To explore implementation issues with the adoption of the conceptual framework by companies within Saudi Arabia

The research aim is to examine the potential application of dynamic capability theory in a Saudi Arabian context. The objectives focus on exploring the influence that leadership capabilities, organizational culture, and organizational learning have on how Saudi organizations identify and select those capabilities they need in order to sustain growth during periods of significant change occurring in their business environment.

A combination of the Systematic Literature Review (SLR), in-depth interviews (qualitative data analysis), and the survey instrument (quantitative data analysis) helped determine the theoretical underpinnings of DC and analysis of the relationship between long-term survivability and DC of Saudi Arabian companies. The SLR provided the constructs used to test the conceptualisation of key terms. In contrast, the qualitative and quantitative data analysis facilitated the conceptualisation of key terms in the Saudi Arabian context.

The research objectives included developing a conceptual framework adapted from the work of Teece (2007), Teece, Pisano, and Shuen (1997), and examining previously unexplored relationships within a Saudi Arabian context. The SLR provided the initial basis for the conceptual framework; additional reading of empirical studies on the application of DC developed the framework further. Survey and interview data assisted in confirming how the study's context reflects the model.

The research objectives included testing the conceptual framework in a Saudi Arabian context to examine the degree of influence that each of the internal enablers has on the individual DC (sensing, seizing, and reconfiguration) of Saudi Arabian companies. Thematic analysis of the qualitative data and exploration of the relationships (correlations coefficient and regression analysis) between the quantitative data variables provided answers to this research objective.

5.1 Philosophy

In business and management studies, there is no single best research philosophy (Saunders & Tosey, 2012); instead, the research strategy and research design are primarily determined by the project's objectives, and the researcher's beliefs and assumptions (Saunders & Tosey, 2012). A key influencer in determining the methodology is the nature of the degree award that the Researcher is seeking. In pursuing a professional doctorate (DBA), the Researcher is primarily focusing on how the theory applies in practice, intending to make a difference to management practices within the context of the study, while also expanding the theory to accommodate contextual differences. A key determinant of the success of this approach is the level of collaboration that occurs with the participants. Critical to achieving a successful partnering relationship is the level of trust that the participants have in the Researcher and a clear vision of the potential mutual beneficial outcome.

Assumptions that go towards shaping the research strategy and research design include pre-existing knowledge (epistemological) on the DC subject; this has been identified to some extent by the literature review. The realities (ontological) of DC within Saudi Arabia; some initial understanding has already been identified through personal observations; and, the strength of the Researcher's personal beliefs and values (Moon & Blackman, 2014).

The selection of research methods chosen for this study are based on the Researcher's assumptions about the nature of social reality (ontology) and the nature and purpose of knowledge (epistemology) in Saudi organizations (Morgan & Smircich, 1980). Epistemology relates to the validity of knowledge, how it is collected and its applicability (Moon & Blackman, 2014, p. 1171).

In this study, the Researcher's subjectivist epistemological philosophy is based on his assumptions (Moon & Blackman, 2014, p. 1172) that knowledge in Saudi organizations is a projection of the personal experiences, beliefs and values of individuals, thereby justifying

the adoption of a subjectivist philosophical stance, and research methods that explore their individual understandings and subjective realities (Cunliffe, 2011, p. 649).

The progression from research philosophy through to the actual collection of data, analysis and conclusions for this project represents a continuum of thoughts and actions that establish alignment between objectives, aims, and the Researcher's biases. Each phase in this continuum is dependent on the preceding phase, to assure overarching alignment in the design.

The characteristics of this project, its objectives and assumptions, suggest adopting a subjectivist research philosophy because Saudi organizations represent large social constructs, where subjective understandings of reality become the basis for thinking more critically about the impact of assumptions, values, and actions (Atiq, 2016; Cunliffe, 2016; Krauss & Putra, 2005; Levers, 2013; Moon & Blackman, 2014; Patel, 2016; Staller, 2013). The Researcher's assumptions based on his personal experiences working in Saudi Arabia support the argument for adopting a subjectivist research philosophy.

The nature or existence, (ontology), of DC is not well understood or is usually misinterpreted by decision-makers in the Saudi Arabian context. This could be because of the strong influence that national culture has on organizational culture, and could reflect the concentrations of dominant social groups. For example, within Saudi Arabia, relationships generally define reality, and preserving relationships with influential people and friends is far more critical than disagreeing on interpretations of reality. Therefore, the view of reality can shift quite rapidly, particularly after senior management changes.

Working in some organizations can sometimes appear chaotic. Because of the apparent absence of trust by senior management, there is generally a concentration of decision-making at senior levels and a lack of empowerment of supervisors and line managers. In general, the personal interpretation by senior managers of their roles influences how their roles are performed and performance measured.

While DC have been studied for several years (Eisenhardt & Martin, 2000; Teece et al., 1997), and several models and theories prevail (epistemology), in the context of Saudi Arabia, the term 'capability' is generally assigned in its narrowest sense to human resource capabilities. More specifically, to the ability of employees to perform a well-defined task. Consequently, there is an absence of explicit knowledge on the intangible and tangible perspective of DC. The different realities of the actors in the Saudi context, depending on

their positioning (internal/external and vertical) and experiences, presents a rich and complex but often disjoint perspective of what is required for an organization to survive in the longer-term. For example, short-term goals such as profitability usually prevail as the paramount strategic planning consideration.

For this research project, adequate knowledge will include opinions, interpretative meanings of observations and narratives that reflect organizational history. The values and beliefs of the actors are represented in multiple versions of reality. Included in these are the biases of the Researcher who has extensive personal experience working within and around these organizations, and within Saudi Arabia.

5.1.1 Action research (reflections of experience by Researcher)

The Researcher is a *"later-career"* practitioner (Pedler, Gold, & Raelin, 2015) with many years of experience assisting Saudi organizations in managing complex organizational transitions. By reflecting on his experiences, he can add to the body of knowledge and give new and pragmatic insights into how to improve the management practices of Saudi organizations. The reflection process aims to improve understanding of past organizational experiences in Saudi organizations and give insight into how the conceptual framework offered in (A conceptual framework, page 33) (Pedler et al., 2015) will address these issues. The intention is to look at these experiences positively to enable the identification of opportunities for improvement.

5.2 Research Strategies and Design

The study employed a deductive approach to determine its impact on established theory and practices.

Theory – DC (Teece et al., 1997) was chosen because it has been widely discussed in the literature (almost 34,000 citations) as suitable for organizations confronting significant change within their business environment. To date, there have been no empirical studies of DC within a Saudi Arabian context.

Model - a conceptual model was developed based on existing models and arguments developed by Teece (2007). The conceptual model incorporates the three major components of Teece's theory – current position, processes (organizational and leadership), and pathways. The conceptual framework also incorporated antecedents - organizational learning, organizational culture, and leadership capabilities.

Variables - previous empirical studies of DC provided the basis for the research variables and questions. Control variables determine if an organization's age, size and the industry in which it operates directly influences its DC. Participants gave their opinions on the current and future priorities and capabilities of Saudi organizations concerning - sensing, seizing, and reconfiguration – processes, and for their opinions on the extent that organizational learning, organizational culture, and leadership capabilities aided or constraints building DC.

Data was collected using mixed methods – qualitative (semi-structured interviews) and quantitative (online survey questionnaire), in order to gain insight of the unique context and to validate the conceptual model.

The study design determines the rigour in meeting the research objectives (Creswell, Plano Clark, Gutmann, & Hanson, 2003). The strengths and weaknesses of qualitative and quantitative methods are utilised to best address the research questions (Kelle, 2006). In this study, an exploratory sequential mixed method approach is utilised. Firstly, the collection and analysis of qualitative data provided an elaboration of the Saudi Arabian context from the Researcher's observations and reflections. Secondly, the collection and analysis of quantitative data provided an understanding of actual practices.

As DC primarily relate to organizational change, and time is of the essence in achieving successful change, a longitudinal study of Saudi organizations who have embraced DC would seem to be the preferred strategy. However, as feedback from the initial requests for participation in this project, and the personal observations and assumptions of the Researcher indicate an absence of appreciation of DC, it made sense to adopt a cross-sectional strategy. A longitudinal strategy would be a worthwhile focus of future research to assess the impact of the adoption of DC and the proposed conceptual framework.

The most extensive set of empirical studies on DC used a mixed-methods approach for data collection (Eriksson, 2014), with two-thirds of studies using qualitative methods, while less than one third used quantitative methods. Some arguments in favour of qualitative methods focus on the 'intangible' nature of DC (Garcia et al., 2014), while advocates of using quantitative methods argue that because DC centres on the routinization of processes, qualitative methods do not adequately account for measuring repeatable processes (Laaksonen & Peltoniemi, 2016).

This project adopted a mixed-methods approach primarily because of the lack of understanding of DC in the Saudi Arabian context. In-depth interviews are an effective way to elevate understanding of the topic among participants, and have been used in previous empirical studies to gain insights and feedback to enhance the instruments used to collect quantitative data (Chang, Chen, & Huang, 2015; H.-F. Lin et al., 2016; Makkonen et al., 2014; Schilke, 2014). In this case, the interviews provided an enhanced understanding of the Saudi Arabia context.

5.3 Data collection

The data collection methods adopted for this study were selected to provide answers to the research question of how the three antecedents (organizational learning, organizational culture, and leadership capabilities) influence the building of DC in Saudi organizations. Maxwell (2013) argues that data collection methods provide the means for answering research questions and should not simply be an attempt to replicate the research question.

Data collection complied with the University of Portsmouth's ethical protocols and the Favourable Ethical Opinion (Reference Number: BAL/2018/E535/COX) granted for this study (Appendix 9 – Favourable Ethical Opinion). Participants were sent an invitation together with an information pack that explained the research objectives, the extent of their participation, and the need for their informed consent. Interviewees were asked at the start of the interview to confirm their informed consent to participate. Survey respondents were required to tick a check box at the start of the survey questionnaire to indicate their informed consent. One survey respondent was prevented from proceeding with the survey because they declined to tick the consent check box.

5.3.1 Qualitative data.

In-depth semi-structured interviews conducted via internet video conferencing facilities provided a primary source of qualitative data. The interviews were conducted prior to the survey questionnaires primarily because an empirical study of this kind had not been previously conducted in Saudi Arabia and it was anticipated that the interviews would provide feedback that might influence the structured survey questionnaire (H.-F. Lin et al., 2016; Saul & Gebauer, 2018; Schilke, 2014), and add further detail to the Saudi Arabian context. The interviews provided a rich narrative on the unique factors and relationships within the Saudi Arabian context that would not have been possible to obtain from a survey

questionnaire. In addition, they confirmed that the conceptual framework and the structure and constructs used in the survey questionnaire were applicable in a Saudi Arabian context.

The interview questions were derived from constructs used in previous empirical studies (Chang et al., 2015; Garcia et al., 2014; H.-F. Lin et al., 2016; Makkonen et al., 2014; Saul & Gebauer, 2018; Schilke, 2014; Zhang & Wu, 2016) listed in Table 5.1 - Constructs used in previous empirical studies of dynamic capabilities (below).

Factor	Sub-factor	Authors
Competitive Advantage	Market share	Schilke, 2014, p. 189
	Profitability, Growth, Industry dynamism	Li & Liu, 2014, p. 2798
Sensing	Sensing processes	Zhang & Wu, 2016, p. 175
	Organizational trust	Fainshmidt & Frazier, 2017, p. 556
	Opportunity and risk assessment	Li & Liu, 2014, p. 2798
		Nieves & Haller, 2014, p. 230
	Knowledge acquisition	Nieves & Haller, 2014, p. 230
	Absorptive capability	Wang et al., 2015, p. 34
	Knowledge generation	Prieto et al., 2009, p. 320
	Success traps	Wang et al., 2015, p. 34
Seizing	Collaboration	Chang et al., 2015, p. 284
		Fainshmidt & Frazier, 2017, p. 556
	Structures and procedures	Zhang & Wu, 2016, p. 175
	Timely decision making	Li & Liu, 2014, p. 2798
	Integration of knowledge	Prieto et al., 2009, p. 320
Reconfiguration	Ability to Align with the changing environment	Fainshmidt & Frazier, 2017, p. 556
	Ability to manage change	D. yuan Li & Liu, 2014, p. 2798
	Integration capability	Nieves & Haller, 2014, p. 230
	Knowledge reconfiguration	Prieto et al., 2009, p. 320
Organizational Culture	Level of trust and collaborative support	Fainshmidt & Frazier, 2017, p. 556
		Prieto et al., 2009, p. 321
	Level of autonomy and empowerment	Prieto et al., 2009, p. 321
Organizational Learning	Level of knowledge transfer from external and internal sources	J. Li & Lee, 2015, p. 671
		Schilke, 2014, p. 190
	The routinization of learning processes	Nieves & Haller, 2014, p. 23
	Skills level of employees	Nieves & Haller, 2014, p. 230
	Sharing of procedural knowledge	Nieves & Haller, 2014, p. 230
	The application of knowledge to process innovation	Schilke, 2014, p. 191
Leadership Capabilities	Entrepreneurialism	Li & Lee, 2015, p. 671
	Coordinating capability	Nieves & Haller, 2014, p. 230
	Support to employees	Prieto et al., 2009, p. 321

Table 5.1 - Constructs used in previous empirical studies of dynamic capabilities

5.3.2 Quantitative data

The survey instrument design incorporated constructs from previous empirical studies of DC. The questions were grouped into sections that approximately align with the conceptual model at (Figure 4.2 - Relationships of antecedents, dynamic capabilities, and long-term survivability, page 36, above).

Competitive advantage - Section A: the questions in this section aimed at establishing the current position of the respondent's organisation. The questions helped identify how the organization compares to its competitors in terms of market share (Schilke, 2014), profitability, growth, and industry dynamism (D. Li & Liu, 2014, p. 2798). These questions serve the purpose of control variables.

Sensing capabilities - Section B: the questions in this section identify elements of the sensing processes in Saudi organizations (Zhang & Wu, 2016, p. 175). They include organizational trust (Fainshmidt & Frazier, 2017, p. 556), opportunity and risk assessment (D. Li & Liu, 2014, p. 2798; Nieves & Haller, 2014, p. 230), knowledge acquisition (Nieves & Haller, 2014, p. 230), absorptive capability (Wang et al., 2015), knowledge generation (Prieto et al., 2009, p. 320), and success traps (Wang et al., 2015).

Seizing capabilities – Section C: the questions in this section identify elements of organizational collaboration (Chang et al., 2015, p. 284; Fainshmidt & Frazier, 2017, p. 556), organizational structures and procedures (Zhang & Wu, 2016, p. 175), timely decision making (D. Li & Liu, 2014, p. 2798), and integration of knowledge (Prieto et al., 2009, p. 320).

Reconfiguration capabilities – Section D: the questions in this section seek to understand the organization's capability at the realignment of its position with the changing environment (Fainshmidt & Frazier, 2017, p. 556), its ability to manage change (D. Li & Liu, 2014, p. 2798), integration capability (Nieves & Haller, 2014, p. 230), and knowledge reconfiguration (Prieto et al., 2009, p. 320).

Organizational culture – Section E: the questions in this section seek to understand the influence that organizational culture has on the organization's dynamic capability processes, for example, the level of trust and collaborative support (Fainshmidt & Frazier, 2017, p. 556; Prieto et al., 2009, p. 321), and the level of autonomy and empowerment given to employees (Prieto et al., 2009, p. 321). A detailed study of organizational culture *per se*, such as Hofstede's or the project GLOBE is outside the scope of this project.

Leadership capabilities – Section F: the questions in this section seek to understand the influence that leadership capabilities have on the organization's DC. For example, an entrepreneurial culture features prominently in the literature as a determinant of an organization's capability to adopt new technologies and adapt to changing circumstances (J. Li & Lee, 2015, p. 671), coordinating capability (Nieves & Haller, 2014, p. 230), and providing support to employees (Prieto et al., 2009, p. 321).

Organizational learning – Section G: the questions in this section seek to understand how the organization ensures that employees have the knowledge they require to do their jobs effectively. For example, knowledge transfer from external and internal sources (J. Li & Lee, 2015; Schilke, 2014), the routinization of learning processes (Nieves & Haller, 2014, p. 230), the skills level of employees (Nieves & Haller, 2014, p. 230), sharing of procedural knowledge (Nieves & Haller, 2014, p. 230), and the application of knowledge to process innovation (Schilke, 2014).

5.3.3 Secondary data.

To instil rigour and reproducibility in the collection of secondary data, a systematic literature review (Appendix 1 - The Systematic Literature Review (SLR) Process, on page 140), was conducted.

Each article in the literature review was considered against five criteria: (1) definitions, and terminology; (2) theories, models and frameworks; (3) measurements, and assessment methods; (4) evolution, and contextual applications; and, (5) relevance to DC in a strategic context. A significant challenge was identifying recent articles that satisfied all five evaluation criteria, and published within since 2011.

5.4 Sample size and selection strategy

The research populations for this project included two sets of participants, one for collecting the qualitative data, and the second for collecting the quantitative data.

Qualitative data was collected from eleven semi-structured in-depth interviews averaging in excess of eighty minutes each. This technique had been used in previous empirical studies (Chang et al., 2015; Gajendran et al., 2014; Garcia et al., 2014; Schilke, 2014; Yeow et al., 2018; Zhang & Wu, 2016) to collect qualitative data relating to DC in the context of their studies.

A critical purposive sampling approach was adopted to create a sample of prominent interviewees with the in-depth knowledge and experience in high-ranking positions in Saudi organizations necessary to answer the research questions. This approach is commonly adopted in qualitative research to identify and select *'information-rich'* contributors (Palinkas et al., 2015, p. 4). To improve the generalizability of the qualitative data, interviewees were not randomly selected but carefully selected from the top management strata of Saudi organizations including Chairmen, CEOs, VPs, and senior managers, who were knowledgeable and willing to articulate how Saudi organizations deal with opportunities, threats, and risks (Sandelowski, 2000).

Previous empirical studies in the literature (D. Li & Liu, 2014; J. Li & Lee, 2015; H.-F. Lin et al., 2016; Nieves & Haller, 2014; Piening & Salge, 2015; Prieto et al., 2009; Sheng, 2017; Vanpoucke et al., 2014; von den Driesch et al., 2015; Wang et al., 2015; Wohlgemuth & Wenzel, 2016; Wu et al., 2016) utilized databases of company information, for their quantitative data. However, the absence of similar data in a Saudi Arabian context meant that quantitative data had to be collected from the source. In this research project, the survey respondents were selected from two sets of people who met the selection criteria; those who were independently approached by the interviewees ('snowballing' approach), and a non-probability convenience sample obtained by direct requests to members of the Researcher's extended network. Despite the arguments that using a non-probability sample relies on the subjective judgement of the Researcher, given the logistical difficulties in obtaining survey data from Saudi Arabia it provided a cost and time-effective method of data collection for the purposes of this study (Wiśniowski, Sakshaug, Perez Ruiz, & Blom, 2020, p. 121).

Selection criteria of survey participants included their experience, in Saudi organizations in roles such as, but not limited to, executive management; strategic management; performance measurement; process improvement; R&D; marketing; change management; and, learning and development roles. In all, there were seventy-five (75) valid responses to the survey.

5.5 Pilot study process

Interviews and survey instruments can give false data if the questions are constructed poorly and misapprehended, particularly when English is a second language for the majority of participants. A pilot of the interview script and survey instrument confirmed that participants could correctly infer the meanings of the questions.

5.6 Data analysis techniques

5.6.1 Qualitative data

The argument for using qualitative data is that it provides useful insights that may not be obvious when relying entirely on quantitative data. The NVivo software package provided a thematic analysis of the interview transcriptions.

The thematic analysis provided a high-level narrative on the complexity of how Saudi organizations identify potential new opportunities, threats and risk, make decisions on new opportunities, threats and risks, and how they manage change and reconfiguration of their asset portfolio. It also contributed to the understanding of the influence that the antecedents (organizational culture, organizational learning, and leadership capabilities) have on DC. Four themes dominated the discussions: the demographics of Saudi Arabia; gender; market and, entrepreneurialism.

5.6.2 Quantitative data

Seventy-five (75) valid survey responses were analysed using the following data analysis techniques in SPSS and SPSS AMOS.

Preliminary analysis – confirms the correct statistical analysis techniques and validates the data. The preliminary analysis confirmed that there was no missing data, and all responses are valid. A visual inspection of the descriptive statistics include details such as mean, standard deviation, range of scores, skewness and kurtosis helped ensure that 'assumptions' regarding tests are not being violated. A test for normalcy for all factors confirmed that the majority of factors gave moderately to approximately symmetric outcomes. Further investigation of factors *7a Current Performance Goals* and *7b Future Performance Goals* suggested a wide range of perspectives on how the performance of Saudi organizations is best measured. The preliminary analysis revealed several 'reverse question' items where a high score is negative. SPSS handled the reversal of the scores for these questions.

Reliability of scale – the Cronbach alpha coefficient indicates the level of internal consistency of the constructs. Values above 0.7 are acceptable, however values above 0.8 are preferable (Pallant, 2016, p. 104). In this study all constructs exceeded the preferred values of 0.8, except for two (2) that had values over the acceptable level of 0.7. This was no surprise because the items in the constructs came from previous empirical studies.

Confirmatory Factor Analysis (CFA) – in general, the CFA results from SPSS AMOS are inconclusive because of the small sample size; however, the 'Goodness of Fit' index > .95 suggests a possible confirmation of the model fit.

Relationships among variables - by studying the strength of relationships among variables, it is possible to predict the scores of a dependent variable from the scores of several independent variables. For example, correlation coefficients provide a numerical indication of the strength and direction of linear relationships. The significant (r=.50 to 1.0) correlation coefficients produced by SPSS confirmed strong positive relationships between the antecedents and DC in a Saudi Arabian context.

Multiple regression determined the predictability of the antecedents (Organizational Culture, Leadership Capabilities, and Organizational Learning) in influencing the DC (Sensing, Seizing, and Reconfiguration). The sample size is important for a successful multiple regression test. Based on the formula prescribed by Tabachnick and Fidell (2014) n > 50 + 8m (where n = number of independent variables), the sample size required for this test is 74, which is less than the sample size *N* used for this test. The assumptions of normalcy, linearity, and multicollinearity are critical before conducting the regression tests. The Normal Probability Plot shows a reasonably straight line from bottom left to top right and the Scatterplot of the residuals are roughly rectangular with no residual more than 3.3 or less than -3.3.

Comparison of groups – cross-tabulations and paired t-tests aided with confirmation and rejection of theoretical assumptions. For example, the literature suggests that the age, size, and maturity of an organization can lead to rigidity of processes, and that significant dynamics occur in different industry sectors. Cross tabulations provided a deeper understanding of the respondents, and paired t-tests provided surprises on the differences in the dynamic nature of Saudi industry sectors.

5.7 Integration of data from multiple sources

Each research method (qualitative and quantitative) has its strengths and weaknesses, however, analysing multiple types of data (Researcher's reflections, interview transcripts and survey responses) as a single explanation of a phenomenon, puts a challenge on the research methods approach to identify the areas where the data overlaps, is complimentary, or contradictory. The Researcher does not attempt to contribute towards the discussion on the

merits of one method over the other, other than to argue that the combination of methods provides rigour, breadth and depth to understanding complexity (Denzin, 2012).

Triangulation is a technique used within a 'mixed-methods' approach to combining the outputs from different research methods so that they can be examined as a single representation of participants' perspectives on the phenomenon being examined (Downward & Mearman, 2007). Original opinions regarding triangulation assigned it to qualitative research methods only. In his early work, Denzin (1973, p301) provided a guide for the application of triangulation and argued that researchers need to be sure that the different methods employed in a mixed-method approach are actually addressing the same issue. In his more recent work (Denzin, 2012), he proposes a critical interpretive approach to mixed-methods. He argues that triangulation should be viewed as an alternative to validation rather than for validation. One argument for adopting triangulation is the notion that it enriches the output from different types of data collection instruments by emphasising how each adds value to the other.

Integration in this study occurs along common threads, of how Saudi organizations conduct dynamic capability processes, and how they build DC.

5.8 Concluding remarks on method and methodology

This chapter has described how the epistemology, methodology, and methods have been logically integrated (Staller, 2013) into a roadmap that the study has followed to rigorously address the fundamental issue of how Saudi organizations deal with the significant changes occurring in their business environment.

The argument that organizations are social entities is persuasive in adopting a subjectivist approach to this study. Subjectivism asserts that knowledge is dependent on the perceptions of actors within a social entity and their social interactions will determine their social reality (Moon & Blackman, 2014). Each actor in a social entity filters reality based on their personal experiences, their shared beliefs, and cultural factors such as language, race and ethnicity (Levers, 2013). A key aspect of subjectivism is that social interactions occur on a continuum in a continual state of flux. Another aspect is that the interactions between the observer and the observed create meaning.

Sceptics of subjectivism will argue that the approach provides little opportunity to differentiate between the observed subject and the observer (Hanly & Hanly, 2001) thereby impacting the observer's ability to be impartial (Atiq, 2016). Others argue that complex

social issues require a multidimensional approach to understanding and determining remedial interventions (Nissen, 2015).

The Researcher believes that the uniqueness of the Saudi Arabian context illustrates how conventions of social interactions, beliefs, and shared experiences influence people's perceptions of reality. The in-depth interviews provided contextual elaboration that challenges the ontological conventions. The roadmap builds the relationships between the research questions and the research objectives. The research questions serve two purposes: to determine the level of change occurring within the Saudi Arabian context and to help understand the practicalities of improving the building of DC in Saudi organizations. To this end, the semi-structured nature of the in-depth interviews used questions that focused on the context of the study, the survey instrument included questions that focused on how DC work in a Saudi Arabian context and the influence that antecedents (organizational learning, organizational culture, and organizational leadership) have on building DC in a Saudi Arabian context.

Strategies for the validation of data and minimization of bias are essential in a study of this nature. The Researcher must acknowledge that their bias (hypotheses, values, beliefs, and preconceptions) has the potential to distort data collection and analysis (Lempp & Seale, 2006). The methods and methodology adopted in this study aim to reinforce honesty and integrity. For example, others have reviewed and confirmed the approach and selection of themes adopted in the thematic qualitative analysis output. The results from empirical studies are the baseline for comparison of quantitative analysis findings. The intersection of all data sources along common threads supports or debunks preconceptions and biases of the Researcher and participants.

This method has sought something different from the original DC framework that emphasised long-term economic benefits from entrepreneurial behaviour (Kay et al., 2018) and building the 'right' DC (Pisano, 2016). This method has sought to explore the DC framework from the perspective of the Saudi Arabian context of how Saudi organizations identify and build the DC required to handle change.

Chapter 6 Findings

In this chapter, a narrative that is unique to the context of the study is produced from an analysis of the data following the methods and methodology described in Chapter 5 Methodology (above). The aim is to identify patterns from the data analysis, establish connections between these patterns and research objectives, and establish linkages to existing research and theory. Although the focus of the analysis is primarily on the interview and survey results, references to literature in this chapter are provided, when thought appropriate, to act as an anchor to previous empirical studies.

The sections of this chapter start with a discussion of the relationship of the data to the research objectives, followed by an intersection of the qualitative and quantitative data, and finishes with a discussion of the results.

6.1 Relationship of data to research objectives.

i. The relationship between long-term survivability and the dynamic capabilities of Saudi Arabian companies.

The Systematic Literature Review (SLR) identified the DC framework (Teece et al., 1997) as a suitable basis for studying how Saudi organizations could develop the capabilities necessary to deal with significant change occurring in their business environment. The SLR enhanced the Researcher's understanding that organizations with highly developed DC are more capable of maintaining their competitive advantage compared to those organizations that persist with a rigid asset portfolio (tangible and intangible). The Researcher's observations suggested that Saudi organizations have little knowledge of the DC framework and typically focus on profitability as the primary measure of long-term survivability. The in-depth interviews provided contextual data on how Saudi organizations measure performance and perceive the connection between their asset portfolio and long-term survivability. The in-depth interviews indicated many triggers for change that are occurring in Saudi Arabia including a high (>60%) percentage of the population that is under the age of 35 years, a rise in entrepreneurialism and shift away from the traditional industries, markets, and forms and expectations of employment.

ii. To determine the theoretical foundations of dynamic capabilities.

This section describes the key concepts used in this study. Chapter 3 Literature Review (above) provides a detailed description of the foundations of DC and confirms the

absence of a definitive theory on the subject. Pisano (2016, p. 4) cites Kuhn (1962, 'The structure of scientific revolutions') as arguing that the process of developing theories involves *'filling the gaps between causal explanations and observed phenomenon'*.

The SLR revealed that the DC framework has a basis in the Research-Based View (RBV) of organizations (Eisenhardt & Martin, 2000; Y. Lin & Wu, 2014; Pisano, 2016; Sirmon et al., 2007). RBV theory helps explain performance differences of organizations within the same or similar industry in terms of the existence or absence of valuable, rare, inimitable and non-substitutable (VRIN) assets (Pisano, 2016, p. 5). The literature reveals a consistency between systems theory and DC (Teece, 2018b), arguing that DC facilitate long-term stability by encouraging systemic internal change.

The original discussion on the DC framework described three principal components: current position, processes (managerial and organizational), and paths (Teece et al., 1997). Subsequent discussions on the framework expanded the notion of processes into three clusters – sensing, seizing, and reconfiguration (Teece, 2007). Each of these clusters contains processes for sensing new opportunities, threats and risks, making timely and effective decisions, and reconfiguring asset portfolios (Teece, 2007). A key aspect of DC is that they do not relate to those capabilities required to maintain normal operations (Teece, 2007, 2012, 2014b; Teece et al., 1997), and take on a more entrepreneurial perspective (Teece, 2012, 2014b, 2017). This entrepreneurial perspective of DC is a reflection of managerial/leadership capabilities (Teece, 2017). There are claims that DC promote organizational agility and support organizations with the continuous process of adaptation (Harsch & Festing, 2019; Teece & Leih, 2016). Others argue that adaptability will come to organizations who make the right decisions about which DC they should focus on building (Pisano, 2016). In contrast, Teece differentiates between risk and uncertainty and argues that DC are critical to supporting organizational ability to handle uncertainty in periods of rapid innovation (Teece & Leih, 2016; Teece et al., 2016).

The literature presents the notion that DC are dependent on the existence of antecedents (Easterby-Smith & Prieto, 2008; Prieto et al., 2009; Zahra et al., 2006), and argues that their presence or absence can seriously affect competitive advantage and long term survivability (Prieto et al., 2009; Teece, 2007). This information is of critical interest to this study, as the study examines and understands the influence these antecedents have on the building of DC in a Saudi Arabian context. The aim is not to thoroughly investigate these

antecedents independently in the literature, but to explore their roles as foundations of DC in a Saudi Arabian context.

Organizational learning appears prominently in the literature as an antecedent to building DC and takes the form of knowledge acquisition, accumulation of corporate experiences, and dissemination and articulation of knowledge (Easterby-Smith & Prieto, 2008; Eriksson, 2014; Nieves & Haller, 2014). Easterby-Smith and Prieto (2008) argue that knowledge is an asset critical for acquiring and retaining competitive advantage (Grant, 1996). However, they also distinguish between knowledge and the process of managing knowledge that is the identification, development and leveraging of knowledge in organizations. The relevance to this study is that Easterby-Smith and Prieto (2008, p. 240) provide a conceptual model of how they see the DC framework (a resource-based view of the organization), overlapping the knowledge management construct (a knowledge-based view of the organization). Their review concludes that DC are dependent on organizational learning processes being capable of exploring and exploiting knowledge simultaneously (Easterby-Smith & Prieto, 2008). Conceptual models (Cheng, Yang, & Sheu, 2016, p. 80; Dixon, Meyer, & Day, 2010, p. 421; Malik & Kotabe, 2009, p. 425; Santos-Vijande, López-Sánchez, & Trespalacios, 2012, p. 1080) provided further information on the relationship between the components of DC and organizational learning. Institutional theory emerges from the SLR with constructs such as 'adoption strategies' (Chandler & Hwang, 2015, p. 1457) that relate to organizational learning.

The SLR reveals connections between the three antecedents of DC under investigation in this study – organizational learning, organizational culture, and leadership capabilities. Yukl (2009, p. 50) provides insight into the influence that organizational leadership has on organizational learning and cites examples of relevant theories such as charismatic leadership. Yukl also illustrates how organizational learning facilitates adaptation and innovation (Yukl, 2008, p. 710) arguing that organizational learning builds abilities to *"deal with threats and opportunities, and effective ways to leverage core competencies"* – core characteristics of DC. Adaptation and innovation (Dixon et al., 2014, p. 200) are described as cyclical activities with each 'feeding' off the other and providing only temporary improvement in competitive advantage until refreshed. Knowing the frequency that these activities are refreshed, if at all, in a Saudi Arabian context is of relevance to this study.

The SLR features arguments demonstrating the influence that organisational culture has on building DC. The focus is on the level of trust and collaborative support given to the adoption of entrepreneurial, innovative efforts of employees (Fainshmidt & Frazier, 2017), and their level of autonomy and empowerment (Prieto et al., 2009). Culture and organizational structure, influences business model innovation (Bock et al., 2012), an essential aspect of building DC (Teece, 2018a). Knowledge management is a critical component in developing an innovative organizational culture (Zheng, Yang, & McLean, 2010), which then influences structures, strategies, and organizational effectiveness.

The SLR confirms that different styles of leadership affect an organization's capability to galvanise around shared goals and objectives (García-Morales, Jiménez-Barrionuevo, & Gutiérrez-Gutiérrez, 2012), and at the same time operate within a volatile, uncertain, complex, and ambiguous business environment (Schoemaker, Heaton, & Teece, 2018, p. 16). Evidence from the literature also emphasises the critical interrelationships that leadership capabilities have on establishing trust, empowering employees to challenge the *status quo*, develop a culture of innovation and entrepreneurialism (Teece, 2014a), and encourage the acquisition and effective management of knowledge (Dixon et al., 2010; García-Morales et al., 2012; Hidalgo-Peñate, Padrón-Robaina, & Nieves, 2019; Nieves & Haller, 2014).

From these discussions in the literature, we gather constructs and conceptual models that become useful in developing a conceptual framework in the next section.

iii. To develop a conceptual framework adapted from the work of Teece, (2007), Teece, Pisano, and Shuen, (1997), and examine previously unexplored relationships within a Saudi Arabian context.

The conceptual framework was adapted from the work of (Teece, 2007, p. 1342). Previous empirical studies provided constructs on the individual relationships between the three antecedents (organizational learning, organizational culture, and leadership capabilities) and DC (Chang et al., 2015; Fainshmidt & Frazier, 2017; D. Li & Liu, 2014; Nieves & Haller, 2014; Prieto et al., 2009; Wang et al., 2015; Zhang & Wu, 2016) (Table above) that assisted in developing a conceptual framework.

A thematic analysis of the interview transcripts using NVivo provided themes, as shown in Table 6.1 - Thematic analysis themes (below).

Interview Question Threads	**Response Themes**

VRIN assets (tangible and intangible) → competitive advantage	Access to natural resources Talent Entrepreneurs Infrastructure Capital Joint ventures Management practices
Sensing processes	Sources of knowledge Opportunities Threats and risks Role of the Saudi Government Organizational Learning Innovation.
Seizing processes	Linkage to Saudi Vision 2030 Agility Management structure Fact-based Management style Market Risk adversity
Reconfiguration processes	History of success in managing change Business process improvement Innovation Top-down management of change Organizational culture Organizational structure
Organizational learning	Knowledge acquisition Knowledge dissemination Knowledge management – technology Employee responsibility for learning Professional Associations Organization Culture Future of jobs Knowledge providers Vocational Vs tertiary training
Organizational culture	Values and Beliefs Trust and Respect Empowerment Performance Experiential learning Gender Tenure of employment
Leadership capabilities	Leadership style Leadership team Entrepreneurial leaders Start-ups‘ Wise Heads on Young Shoulders’

Table 6.1 - Thematic analysis themes

Qualitative data from the semi-structured interviews confirmed the relationships between the conceptual framework and the Saudi Arabian context. They highlighted the contextual themes that are triggering changes in Saudi Arabia, particularly the role of the Saudi Government in driving economic and social change.

'Saudi organizations go to considerable lengths to ensure that their internal decision-making process delivers outcomes that align with Vision 2030.'

The Kingdom of Saudi Arabia has a high percentage (~60%) of its population under 35 years of age giving it ready access to a large pool of talent, which provides a critical competitive advantage.

'who are very eager to transform and to change; they are the most important capital (asset) for Saudi Arabia, more than the oil and other natural resources (oil & gas, gold, phosphate, aluminium)'

Young Saudi graduates are increasingly adopting entrepreneurial pursuits (such as start-ups) as an employment choice rather than competing for a decreasing number of opportunities with traditional employers in the Government, Family Businesses, and Oil and Gas Sectors.

'Young people do not expect to be permanent employees, but often prefer to work as a contingent employee on projects. They work on those things that they like to do, they are motivated to learn on their own discretion, and they will execute.'

'there is an emerging and growing tangible entrepreneurialism.'

'more and more young people are starting their own businesses rather than seeking employment with one of the major Saudi companies'

Saudi Arabia has a high rate of female participation in tertiary education; however, female participation in the workforce has traditionally been low. Interviewees provided different points of view on increasing female participation in the workforce. Some argued that the Government imposed quotas on female participation would require substantial training, particularly in industrial settings.

'We are starting to employ females in the company but not in the plants. Although some of this is in response to government directives – Saudi Vision 2030. I do not see that employing females will change the culture of the company.'

'they seem to focus on enforcement of quotas to close the gap, which could be dangerous because you do not want to set people up for failure.'

Some interviewees saw greater female participation in the workforce as a significant and positive advance towards greater productivity at both the organizational and national levels.

'Whereas in the past, male-dominated organizations exhibited high levels of complacency, the introduction of high performing females is creating greater competition.'

Females would certainly affect the organizational culture and make a significant impact. For example, they are more scientific and more organized than males, and those that have joined the company are doing a very good job.'

'There is an economic argument that the inclusion of females in the workforce will lift a nation's GDP by as much as 5%.'

Interviewees identified the unstable regional geopolitical situation as a constraint to the expansion of Saudi companies beyond the Saudi domestic market. They argued that this is incongruous to the Saudi Vision 2030 aims of job creation, and value realization, through a reduction in reliance on traditional petrochemical, oil and gas industries.

'Saudi organizations are historically risk-averse.'

'Saudi organizations have historically taken an insular view of the market and ignored regional and global opportunities.'

'with a few obvious exceptions (oil & gas), Saudi organisations have focused almost entirely on supplying the domestic market.'

'the geopolitical situation and instability in the region is a key factor in risk management.'

'Significant opportunities are perceived possible if the market was truly open, and the geopolitical situation in the region stabilised'.

These comments from interviewees add a contextual flavour that reflects many of the differentiating aspects of the Saudi Arabian context.

iv. To examine the key factors that drive the development of dynamic capabilities in the context of Saudi organisations.

The design of the online survey questionnaire came from constructs used in previous empirical studies listed in Table 5.1 - Constructs used in previous empirical studies of dynamic capabilities (above) that tested the contribution the antecedents (organizational learning, organizational culture, and leadership capabilities) make in building DC.

Replication of the data analysis methods used in the previous studies made it easier to confirm the reliability and validity of the data and scale.

Confirmatory Factor Analysis (SPSS AMOS) is primarily associated with researching new theories. The CFA gave the expected inconclusive results (see Table 6.2 - Confirmatory Factor Analysis below) because of the constraints imposed by the sample size. Barrett (2007, p. 820) argues that any *"SEM analyses based upon samples of less than 200 should simply be rejected outright"* unless the *"sample might be said to contain all likely members of a specified population"*. Kyriazos (2018) adds to the argument that *"Factor Analysis (EFA, CFA) and SEM are large sample size methods"* and that *"chi-square tests and goodness of fit indices are equally sensitive to sample size"*. Kline (2016) is more pedantic, arguing that a sample size less than 100 is only tenable in special conditions, where a higher Goodness of Fit Index (GFI) of ~ 0.95 could be appropriate for smaller sample sizes.

	Chi-square	df	Prob. Level	CMIN/DF	GFI	AGFI	CFI	PCFI	PCLOSE	PMSEA
Sensing	53.443	72	.950	.742	.967	.924	1.0	.571	1.000	.000
Seizing	12.250	9	.2	1.361	.957	.866	.986	.422	.324	.070
Reconfiguration	8.720	9	.464	.969	.963	.915	1.0	.600	.603	.000
Organizational Culture	44.787	26	.012	1.723	.880	.792	.954	.689	.061	.099
Organizational Learning	44.964	54	.805	.833	.920	.866	1.0	.692	.954	.000
Leadership Capabilities	30.182	30	.456	1.006	.927	.866	1.0	.666	.705	.009

Table 6.2 - Confirmatory Factor Analysis

Evidence of common method bias was tested with reverse questions in the constructs, and not evident in the exploratory factor analysis tests. Cronbach alpha tests (SPSS) confirmed the reliability of the scale. *Table 6.3 - Comparison of this study's Cronbach alpha scores with previous studies* (below), compares the scores from this study with those of previous studies.

Factor	*N*	*M*	*SD*	Cronbach Alpha	Expected Cronbach Alpha
Q8. Measures of competition	7	26.80	4.711	.775	>.7(.886)
Q9. Industry dynamics	4	12.71	3.157	.730*	>.7 (.764)
Q10. Sensing capabilities	10	32.76	6.953	.858*	>.7 (.840)
Q11. Seizing capabilities	8	23.45	5.811	.850	>.7 (.849)
Q12. Reconfiguration capabilities	6	18.47	5.832	.913	>.7 (.823)
Q13. Organizational culture	9	27.67	7.646	.909	>.7 (.870)
Q14. Leadership capabilities	9	27.89	7.965	.927*	>.7 (.912)
Q15. Organizational learning	13	38.68	11.289	.946	>.7 (.965)

* Factor contains items that needed reversing of scores

Table 6.3 - Comparison of this study's Cronbach alpha scores with previous studies

a) Preliminary analysis of survey data

The preliminary analysis established a better understanding of the survey data; see Appendix 4 - Preliminary analysis of Survey data (below). All factors gave moderately to approximately symmetric outcomes when tested for normalcy, some interesting results, such as reverse questions required further investigation. The valid count confirmed that no missing data and all responses are valid. A visual inspection of mean scores suggested further selective investigations. For example, a cross-tabulation of 'Job level' and 'Tenure in job', gave useful information on the survey respondents that is some cases contradicted the assumptions of the Researcher and the opinions of interviewees. For example, interviewees suggested that senior executives of organizations typically have long tenure and are relucent to adopt change:

'Typically, the senior executive management level of Saudi organizations have been there are very long time, and their interest is primarily to preserve the status quo.'

Whereas this may have been true in the past, approximately 55% of executives who responded to the survey indicated that they have been in the position for less than five years.

b) Exploration of relationships among variables

i. Correlation

Correlation coefficients provide a numerical indication of the strength and direction of the relationships among the variables and indicate the predictability of dependent variable scores from independent variables. The following relationships: Group 1 - Organizational Culture and DC (Sensing, Seizing, and Reconfiguration); Group 2 - Leadership Capabilities and DC; and, Group 3 - Organizational Learning and DC, all exhibited strong positive relationships between antecedents (organizational culture, leadership capabilities, and

organizational learning) and the three dynamic capability processes (sensing, seizing, and reconfiguration).

Preliminary analysis of the Organizational Culture variable with the DC (Sensing, Seizing, and Reconfiguration) dependent variables confirmed assumptions of normalcy. Pearson-Correlation provided the correlation coefficients. On the basis that a correlation coefficient (*r*) is considered small if *r* = .10 to .29, medium if *r* = .30 to .49, and large if *r* = .50 to 1.0. There are strong positive relationships between Organizational Culture and Sensing Capabilities (*r* = .630, *n* = 75, *p* < .01), Organizational Culture and Seizing Capabilities (*r* = .513, *n* = 75, *p* < .01), and Organizational Culture and Reconfiguration Capabilities (*r* = .741, *n* = 75, *p* < .01). See *Table 6.4 - Correlation coefficients for Group 1- Organizational Culture & DC* (below).

	Variables	Mean	SD	1	2	3	4
1	Organizational Culture	3.0741	.84961	1			
2	Sensing Capabilities	3.2760	.69532	.630**	1		
3	Seizing Capabilities	2.9317	.72634	.513**	.681**	1	
4	Reconfiguration Capabilities	3.0778	.97195	741**	.688**	.630**	1

N = 75. **. Correlation is significant at the 0.01 level (2-tailed).

Table 6.4 - Correlation coefficients for Group 1- Organizational Culture & DC

Preliminary analysis of the Leadership Capabilities variable with the DC (Sensing, Seizing, and Reconfiguration) dependent variables confirmed assumptions of normalcy. Pearson-Correlation provided the correlation coefficients. On the basis that a correlation coefficient (*r*) is considered small if *r* = .10 to .29, medium if *r* = .30 to .49, and large if *r* = .50 to 1.0. There are strong positive relationships between Leadership Capabilities and Sensing Capabilities (*r* = .697, *n* = 75, *p* < .01), Leadership Capabilities and Seizing Capabilities (*r* = .590, *n* = 75, *p* < .01), and Leadership Capabilities and Reconfiguration Capabilities (*r* = .795, *n* = 75, *p* < .01). See *Table 6.5 - Correlation coefficients for Group 2 – Leadership Capabilities & DC* (below).

	Variables	Mean	SD	1	2	3	4
1	Leadership Capabilities	3.1387	.81372	1			
2	Sensing Capabilities	3.2760	.69532	.697**	1		
3	Seizing Capabilities	2.9317	.72634	.590**	.681**	1	
4	Reconfiguration Capabilities	3.0778	.97195	.795**	.688**	.630**	1

N = 75. **. Correlation is significant at the 0.01 level (2-tailed).

Table 6.5 - Correlation coefficients for Group 2 – Leadership Capabilities & DC

Preliminary analysis of the Organizational Learning variable with the DC (Sensing, Seizing, and Reconfiguration) dependent variables confirmed assumptions of normalcy. Pearson-Correlation provided the correlation coefficients. On the basis that a correlation coefficient (*r*) is considered small if *r* = .10 to .29, medium if *r* = .30 to .49, and large if *r* = .50 to 1.0. There are strong positive relationships between Organizational Learning and Sensing Capabilities ($r = .715$, $n = 75$, $p < .01$), Organizational Learning and Seizing Capabilities ($r = .616$, $n = 75$, $p < .01$), and Organizational Learning and Reconfiguration Capabilities ($r = .802$, $n = 75$, $p < .01$). See *Table 6.6 - Correlation coefficients for Group 3 – Organizational Learning & DC* (below).

	Variables	Mean	SD	1	2	3	4
1	Organizational Learning	2.9754	.86837	1			
2	Sensing Capabilities	3.2760	.69532	.715**	1		
3	Seizing Capabilities	2.9317	.72634	.616**	.681**	1	
4	Reconfiguration Capabilities	3.0778	.97195	.802**	.688**	.630**	1

N = 75. **. Correlation is significant at the 0.01 level (2-tailed).

Table 6.6 - Correlation coefficients for Group 3 – Organizational Learning & DC

In addition, there are strong positive relationships between the DC themselves - Sensing Capabilities and Seizing Capabilities ($r = .681$, $n = 75$, $p < .01$), Sensing Capabilities and Reconfiguration Capabilities ($r = .688$, $n = 75$, $p < .01$), and Seizing Capabilities and Reconfiguration Capabilities ($r = .630$, $n = 75$, $p < .01$). These results suggest that the strength of the early processes (for example, sensing) influences the processes that follow (for example, seizing).

ii. Regression

Separate multiple regression tests identified the degree that the antecedents (Organizational Culture, Managerial Capabilities, and Organizational Learning) have on

Sensing Capabilities, Seizing Capabilities, and, Reconfiguration. The data used in these tests come from the survey of Saudi respondents.

Sample size is important for a successful multiple regression test. Based on the formula prescribed by Tabachnick and Fidell (2013, p. 123) n > 50 + 8m (where m = the number of independent variables), the sample size required for this test is seventy-four (74), which is less than the sample size *N* used. In this case, the sample size of seventy-five (75) valid responses meets the minimum threshold.

Standard multiple regression was used to assess the ability of the three antecedents (Organizational Culture, Leadership Capabilities and Organizational Learning) to predict the level of Sensing Capabilities. Preliminary analyses confirmed no violations of the assumptions of normalcy, linearity, and multicollinearity. The Normal Probability Plot shows a reasonably straight line (Appendix 5 - Exploration of relationships among variables (below)) from bottom left to top right, and the Scatterplot of the residuals is roughly rectangular with no residual more than 3.3 or less than -3.3.

The Adjusted *R* Squared value of .484 indicates that the antecedents explain 48.4% of the variance in Sensing Capabilities. Of these independent variables, Organizational Learning makes the greatest unique contribution (standardized coefficient $B = .4$, $P < .020$). See Figure 6.1 - Regression Testing Results (below).

Standard multiple regression was used to assess the ability of the three antecedents (Organizational Culture, Managerial Capabilities and Organizational Learning) to predict the level of Seizing Capabilities. Preliminary analyses confirmed no violations of the assumptions of normalcy, linearity, and multicollinearity. The Normal Probability Plot shows a reasonably straight line (Appendix 5 - Exploration of relationships among variables (below)) from bottom left to top right, and the Scatterplot of the residuals is roughly rectangular. However, one case (71) with a standardized residual of 3.722 is more than 3.3 or less than 3.3. In this case, the max value for Cook's Distance in the Residuals Statistics table (.237) is less than one, so there was no need to investigate further or remove the case.

The Adjusted *R* Squared value of .371 indicates that the antecedents explain 37% of the variance in Seizing Capabilities. Of these independent variables, Organizational Learning makes the greatest unique contribution (standardized coefficient $B = .387$, $P < .043$). See Figure 6.1 - Regression Testing Results (below).

Standard multiple regression was used to assess the ability of the three antecedents (Organizational Culture, Managerial Capabilities and Organizational Learning) to predict the level of Reconfiguration Capabilities. Preliminary analyses confirmed no violations of the assumptions of normalcy, linearity, and multicollinearity. The Normal Probability Plot shows a reasonably straight line from bottom left to top right (Appendix 5 - Exploration of relationships among variables (below)), and the Scatterplot of the residuals is roughly rectangular. However, one case (1) with a standardized residual of 3.280, which although slightly less 3.3 or less than -3.3, has a max value for Cook's Distance in the Residuals Statistics table (1.245) that is more than 1, suggesting that there is a potential problem requiring further investigation or removal of the offending case.

The Adjusted *R* Squared value of .7 indicates that the antecedents explain 70% of the variance in Reconfiguration Capabilities. Of these independent variables Organizational Leadership makes the greatest unique contribution (standardized coefficient $B = .352$, $P < .008$). See *Figure 6.1 - Regression Testing Results* (below).

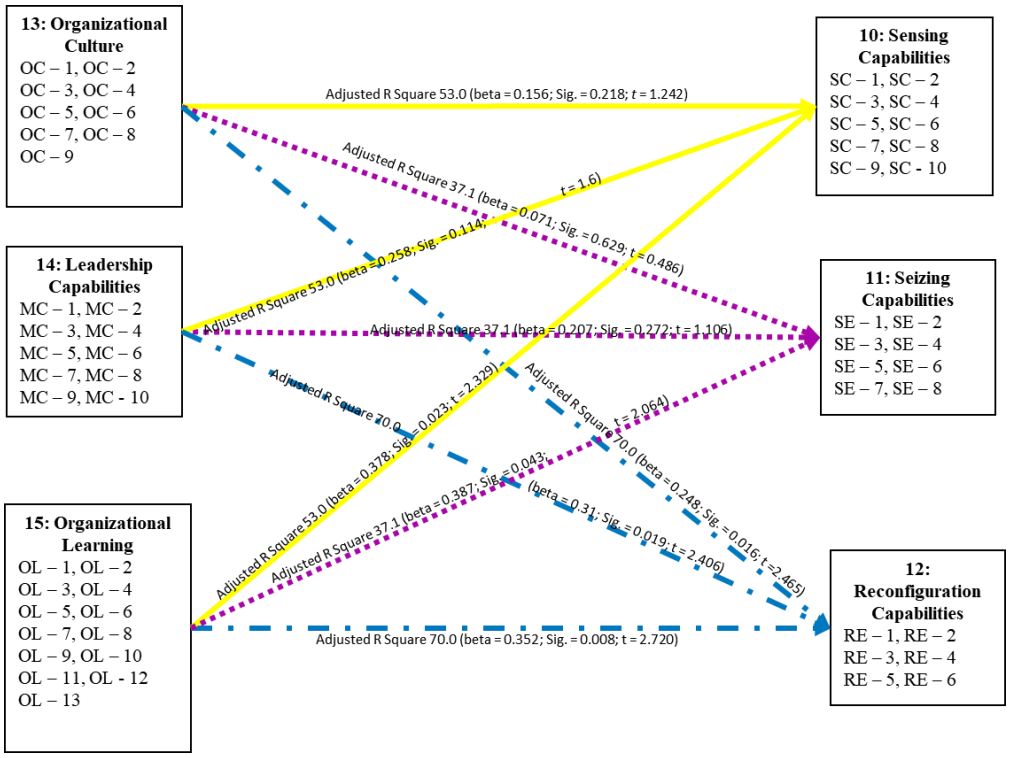

Figure 6.1 - Regression Testing Results

By presenting the results from *Figure 6.1 - Regression Testing Results* (above) in tabular form *Table 6.7 - Influence of antecedents on dynamic capabilities in the Saudi Arabian* context (below), the influence that the antecedents have on each of the DC within the Saudi Arabian context can be better visualised. The R squared value, which explains the

amount of variance in the dependent variable attributed to the independent variables, is highest for the Reconfiguration Capabilities (70%), lowest for the Seizing Capabilities (37%) and in the middle for Sensing Capabilities (53%). Of the three antecedents, Organizational Learning has the strongest unique contribution to all three DC: Sensing Capabilities (37.8%); Seizing Capabilities (38.7%; and, Reconfiguration Capabilities (35.2%).

Dynamic Capability	Organizational Culture	Leadership Capabilities	Organizational Learning
Sensing Capabilities R^2 value .53	B = .156	B = .258	B = .378
Seizing Capabilities R^2 value .37	B = .071	B = .207	B = .387
Reconfiguration Capabilities R^2 value.70	B = .248	B = .310	B = .352

Table 6.7 - Influence of antecedents on dynamic capabilities in the Saudi Arabian context

iii. Comparison of groups

The purpose of conducting a comparison of groups in this research project was to 'deep dive' into the data to identify any variance in scores between groups such as between industry sectors.

Before conducting comparisons of groups, the data had gone through several steps to confirm its validity, account for any missing values, tested its normalcy, identified the strength of relationships, and checked the predictability of dependent variables from the independent variables. All values accounted for, the tests for normalcy revealed few exceptions that are not moderately or approximately symmetrical, and the regression testing identified only two cases of outliers.

iv. Industry Sector Dynamics t-test

Table 6.8 - Industry Sector Dynamics (below) compares the means for the Industry Sector Dynamic Scores grouped by Industry Sector. *Ho:* there is a statistically significant difference ($p < .05$) in the mean scores for Industry Sector Dynamics across industry sectors. *H1:* the difference in the mean scores for Industry Sector Dynamics is not statistically significant across industry sectors. Reject the null hypotheses as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors; therefore, there is no significant difference between Industry Sector Dynamics across all of the Industry Sectors.

				P-value of T-Test of equality of means Sig. (2-tailed) *CI*(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	3.02	.54501	-			
Mining & Manufacturing	6	3.00	.78174	.941	-		
Services	25	3.29	.47209	.064	.240	-	
Other	19	2.97	.72771	.775	.920	.077	-

Total	75	3.10	.59916				

Table 6.8 - Industry Sector Dynamics

v. Sensing Capabilities t-test

Table 6.9 - Sensing Capabilities t-test (below) compares the means for the Sensing Scores grouped by Industry Sector. *Ho:* there is a statistically significant difference ($p < .05$) in the mean scores for Sensing Capabilities across industry sectors. *H1:* the difference in the mean scores for Sensing Capabilities is not statistically significant across industry sectors. Reject the null hypotheses, as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors. Therefore, there is no significant difference between Sensing Capabilities across all of the Industry Sectors.

				P value of T-Test of equality of means Sig. (2-tailed) CI(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	3.35	.60008	-			
Mining & Manufacturing	6	3.12	.79854	.432	-		
Services	25	3.40	.60484	.762	.340	-	
Other	19	3.07	.87181	.215	.905	.212	-
Total	75	3.28	.69532				

Table 6.9 - Sensing Capabilities t-test

vi. Seizing Capabilities t-test

Table 6.10 - Seizing Capabilities t-test (below) compares the means for the Seizing Scores grouped by Industry Sector. *Ho:* there is a statistically significant difference ($p < .05$) in the mean scores for Seizing Capabilities across industry sectors. *H1:* the difference in the mean scores for Seizing Capabilities is not statistically significant across industry sectors. Reject the null hypothesis, as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors. Therefore, there is no significant difference between Seizing Capabilities across all of the Industry Sectors.

				P value of T-Test of equality of means Sig. (2-tailed) CI(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	2.99	.69683	-			
Mining & Manufacturing	6	2.92	.78925	.823	-		
Services	25	2.95	.73598	.844	.922	-	
Other	19	2.84	.78179	.493	.827	.621	-
Total	75	2.93	.72634				

Table 6.10 - Seizing Capabilities t-test

vii. Reconfiguration Capabilities t-test

Table 1 - Reconfiguration Capabilities t-test (below) compares the means for the Reconfiguration Capability Scores grouped by Industry Sector.

Ho: there is a statistically significant difference ($p < .05$) in the mean scores for Reconfiguration Capabilities across industry sectors. *H1*: the difference in the mean scores for Reconfiguration Capabilities is not statistically significant across industry sectors. Reject the null hypothesis, as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors. Therefore, there is no significant difference between Reconfiguration Capabilities across all of the Industry Sectors.

As the Sig. (2-tailed) value is greater than .05 for all Industry Sectors, there is no significant difference between Reconfiguration Capabilities across all of the Industry Sectors.

				P value of T-Test of equality of means Sig. (2-tailed) CI(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	3.15	1.02325	-			
Mining & Manufacturing	6	3.00	.84327	.748	-		
Services	25	3.15	.84618	1.000	.706	-	
Other	19	2.92	1.13769	.494	.877	.454	-
Total	75	3.08	.97195				

Table 1 - Reconfiguration Capabilities t-test

6.2 An intersection of the data sources.

This section presents a consolidated narrative of qualitative and quantitative data. In some cases, the data from one source contradicts the data from another source. The nature of the data source determines its richness, validity, and generality. The structure of this section aligns with the structure as described in the original DC framework (Teece et al., 1997) with the addition of antecedents drawn from the conceptual framework in this study.

6.2.1 Position

Survey data Appendix 4 - Preliminary analysis of Survey data (below) gives mixed results on the degree of environmental dynamism in Saudi Arabia. For example, 78% of respondents scored 3 – 5 for *'Products or services update quickly'* (mean 3.27, std. 1.155), and 81% of respondents scored 3 – 5 for '*The technology in our industry changes rapidly'* (mean 3.57, std. 1.64). These scores indicate medium to high levels of dynamism in the Saudi Arabian context. However, 75% of respondents scored 1 - 3 for *'It is difficult to predict changes in technology in our industry'* (mean 2.93, std. 1.031), and 80% of

respondents scored 1 – 3 for *'It is difficult to predict changing customer needs'* (mean 2.69, std. 0-.972). These scores indicate a high degree of predictability and therefore low to medium levels of environmental dynamism in the Saudi Arabian context.

The interviewees (Chairmen, CEOs, and Vice Presidents) described seven categories of assets (tangible and intangible) that influence the competitive advantage of Saudi organizations. Their answers reflect both an internal (within Saudi Arabia) and external (outside Saudi Arabia) perspective.

i. Access to natural resources

The Researcher's assumption that most organizations would consider access to cheap natural resources such as land (to build on), minerals, energy and water as the key differentiators that set Saudi organizations apart from others conflicted with the interviewees' perspectives. Although access to natural resources does give some Saudi organizations a competitive advantage compared to companies outside the Kingdom, it was not considered a VRIN resource, and therefore not crucial to competitive advantage.

ii. Talent

The dominant resource judged by all interviewees as VRIN, and a critical differentiator of organizations, was talent. The demographics of the Kingdom of Saudi Arabia, which has a high percentage (~60%) of its population under 35 years of age, presents many paradoxes for the Kingdom to resolve. On the one hand, there is a large pool of well-educated young professionals,

> *"who are very eager to transform and to change; they are the most important capital (asset) for Saudi Arabia, more than the oil and other natural resources (oil & gas, gold, phosphate, aluminium)."*

On the other hand, there is a groundswell of young well-educated professionals (of both genders) looking for meaningful job opportunities. These people are looking to realize their full potential and contribute to the advancement of the Kingdom.

iii. Entrepreneurs

The interviewees gave recognition to the relatively recent emergence of entrepreneurs as a significant subset of the talent VRIN.

> *'there is an emerging and growing tangible entrepreneurialism.'*

In the past, university graduates would look for long-term job opportunities in government agencies, or companies involved in the oil, gas, and petrochemical industries, or banking or family-owned and operated companies. Job status was traditionally critical in career selection. However, graduates are more inclined to look for project-oriented work that aligns with their interests rather than transactional work.

'more and more young people are starting their own businesses rather than seeking employment with one of the major Saudi companies'

iv. Infrastructure

Compared to European and North American economies, the modernisation of the Saudi Arabian economy is relatively recent and sudden. Saudi Arabia did not have the infrastructure assets of canals, railroads, ports, roads, hospitals, and schools that existed in other countries. In essence, Saudi Arabia was the quintessential 'green-field' site that required everything to be 'built from scratch'.

'The Saudi Government's role in developing infrastructure (railways, industrial cities and ports) has been critical for the establishment of industry in Saudi Arabia.'

v. Capital

There are apparent differences between Saudi organizations that have access to ready sources of capital and those who do not. This phenomenon is not unique to Saudi Arabian but is a constraint to the Saudi Government's achievement of the Saudi Vision 2030 goals. Their intervention has included the establishment of a fund to assist entrepreneurial start-ups.

'Access to capital is readily available for large Saudi companies and their megaprojects; however, Saudi banks remain reluctant to support young entrepreneurs.'

vi. Joint ventures

Saudi organizations across the entire economic spectrum have historically collaborated and formed partnerships with external entities (commercial and academic) to acquire new knowledge, skills, and routines that minimise the risk of failure.

'Joint ventures with leading international companies have proven beneficial to Saudi organizations because the joint venture partner introduces technologies, knowledge, skills and operational capabilities that did not exist in the Kingdom.'

vii. Management practices/processes

Saudi managerial practices and processes are static in that they focus on coordination and integration activities rather than the dynamic transformational activities associated with learning and reconfiguring or realigning of asset portfolios.

'Saudi management is perceived as being risk-averse and slow to make decisions'

Saudi managerial practices and processes focus on current organizational performance.

'a focus on profitability has resulted in management being more concerned about improving existing processes rather than looking at whether those processes are appropriate for the future.'

6.2.2 Sensing Capabilities

There is no specific mention of 'sensing capabilities' in the original work on DC, although it is assumed to be one of the *'organizational and managerial processes'* (Teece et al., 1997). The 'sensing capabilities' are internal processes (organizational and managerial) embedded within an organization for scanning and interpreting knowledge relating to new opportunities, threats and risk – both internal and external (Teece, 2007, p. 1322).

The interviewees (Chairmen, CEOs, and Vice Presidents) described how Saudi organizations sense new opportunities, threats and risks, and how might they improve these processes? They identified six themes.

i. Sources of knowledge

Research confirms the complex interactions that occur between internal resources and external resources in the knowledge acquisition, integration, generation and absorption processes. In addition, the industry that an organization operates in and its reputation and standing in that industry influence the effect of its internal resources on its ability to sense new opportunities, threats and risks (Zhang & Wu, 2016, p. 175).

A typical 'complaint' among senior management in Saudi organizations is their heavy reliance on external consultants to provide strategic information about opportunities, threats and risks.

'Saudi organizations lack specific structures and processes for capturing knowledge on new opportunities, threats and risks. The organization's size has a bearing on how this process is performed and what capabilities are employed.'

However, this contradicts 84% of survey respondents who scored 3 – 5 for the question *'Organizations gather information about opportunities, threats, and risks by well-established and followed processes'* (mean 3.55 std. 1.033).

ii. Opportunities

Organizational learning is a key antecedent to the identification of opportunities. However, it is dependent on an organizational culture that fosters trust, synchronized efforts and combined outputs of all organization members (Fainshmidt & Frazier, 2017, p. 556). Embedded trust within organizational culture encourages employee attitudes, behaviours, the development of relationships, the sharing of knowledge and the breaking down of structural silos.

While 86% of survey respondents scored 3 – 5 for the question 'Sensing new opportunities, threats and risk is a key capability for long term survivability' (mean 3.6 std. 1.013), the interviewees expressed concern about opportunities, threats and risks going unnoticed. A fear expressed by many interviewees is the consequences of missing opportunities that could have provided beneficial outcomes. For example, the focus on the Saudi domestic market for most Saudi organizations limits the scope of new opportunities and growth.

'Saudi organizations have historically taken an insular view of the market and ignored regional and global opportunities.'

Regional political instability and conflict is a significant constraint on encouraging Saudi organizations to expand into regional markets and foreign investment in Saudi organizations.

'Significant opportunities are perceived possible if the market was truly open, and the geopolitical situation in the region stabilised'.

iii. Threats and risks

The repository of knowledge of potential threats and risk to an organization is not a single entity (thing) in possession of any individual. However, it is represented by the collective understanding of all employees (Nieves & Haller, 2014, p. 229). Nowhere is this

more important than in the hazardous industries that prevail in Saudi Arabia where the loss of life can result from simple mistakes of judgement and safety. Extensive job skills development and certification programs develop and reinforce a culture of safety; however, incidents involving loss of life do occur, too frequently.

> *'Safety is a common perceived threat, particularly to those companies who have hazardous operations – oil and gas refineries, and chemical plants.'*

Tensions in the region have increased the risk of external physical threats. For example, attacks on crude oil carriers in the Gulf, and missile attacks on Saudi Aramco's Abqaiq oil distribution centre.

> *'The geopolitical risk in the region is extreme, and foremost in the minds of Saudi organizations.'*

iv. Role of the Saudi Government

The Saudi Government, through its Saudi Vision 2030, influences Saudi organizations in many ways, from establishing the performance measures for Saudi organizations through to their performance targets. This level of micromanagement is a distraction for some Saudi organizations who sense opportunities, threats and risk differently from the Saudi Government.

> *'Saudi organizations are focused on addressing the growth and performance targets being set by the Saudi Government.'*

The Saudi Government's directions to Saudi organizations often seem to contradict the growth and job creation aims of the Saudi Vision 2030.

> *'The Saudi economy is currently under so much strain that organizations have had yet another requirement set by the Saudi government that they must constrain their budgets by 30%'.*

v. Organizational Learning

Knowledge acquisition is an external looking process intended to examine and compare how the organization 'fits' into its business environment. To understand how Saudi organizations performed this process, participants were asked if Saudi *'Organizations gather information about opportunities, threats, and risks via connections to universities, research organizations, and professional associations'*. Sixty per cent of survey respondents scored 1 – 3 for this question (mean 3.09 std. 1.265). When asked if *'Organizations gather*

information about opportunities, threats, and risks via connections with industry affiliates' sixty-three per cent of survey respondents scored 1 – 3 for this question, (mean 3.20 std. 1.013). This is an interesting result and contradictory to other evidence shown above on the prevalence of joint ventures between Saudi organizations and leading international entities.

The interviewees expressed great hope and optimism for a well-educated population of potential employees; however, the survey results support a contrary view that Saudi organizations continue to rely on external entities, particularly consulting companies, for knowledge acquisition.

> *'Saudis have a passionate optimism for the potential innovation and entrepreneurialism that would come from a well-educated new generation of Saudis.'*

While Saudi organizations may publically express enthusiasm towards knowledge acquisition, an outward perspective, their absorptive and transformative capabilities require internal capabilities that assimilate and merge new knowledge with existing internal knowledge. Absorptive capabilities require a willingness and ability to transform existing practices and update the organization's body of knowledge (Wang et al., 2015). Transformation of existing tacit and explicit knowledge involves collaboration and social interactions of all employees (Prieto et al., 2009, p. 316).

Participant responses to survey questions provide a measure of the degree to which employees are actively involved in the knowledge generation, acquisition, and integration. When asked if Saudi *'Organizations gather information about opportunities, threats, and risks by encouraging employees to acquire and utilize new knowledge'* 60% scored 3 – 4 (mean 3.29 std. 1.136). This result suggests that on average Saudi organizations actively encourage employees to individually acquire and utilize new knowledge, without any notion of sharing and socializing new knowledge. When asked if Saudi '*Organizations gather information about opportunities, threats, and risks by encouraging employees to look for, to discuss, and to report new opportunities, threats, and risks'* 69% scored 1 – 3 (mean 3.04 std. 1.019). This result indicates less emphasis on the internal sharing and socializing of new knowledge among employees.

vi. Innovation.

Saudi organizations are reluctant to develop high-level absorptive capabilities that would lead to changes in the *status quo*. Ninety per cent of survey respondents scored 3 – 5 for the question '*Organizations prefer to adopt technologies that are well established in their*

industry' (mean 3.75 std. 0.988). Eighty per cent of survey respondents scored 3 – 5 for the question *'Organizations prefer to rely on familiar technologies rather than adopt new technologies'* (mean 3.33 std. 1.031). These results support previous findings (Wang et al., 2015) that success reinforces past practices and creates a reluctance to adopt innovation. They argue that *'success traps'* constrain organizational focus on the exploitation of existing resources and practices.

Despite the existence of research centres such as the King Abdulla University of Science and Technology (KAUST), interviewees indicated a lack of 'pure' research by Saudi organizations.

> *"[Saudi organisations] still have quite a way to go in hard-core research and disruptive technologies'. '[there are] high expectations that Small/Medium Enterprises (SME) entrepreneurial companies will become the innovation engine for Saudi Arabia.'*

Some interviewees claimed that many Saudi organizations view KAUST as a *'problem solver'* rather than a *'direction setter'*.

6.2.3 Seizing Capabilities

As with sensing capabilities, there is no specific mention of 'seizing capabilities' in the original work on DC, although it is also assumed to be one of the *'organizational and managerial processes'* (Teece et al., 1997). The 'seizing capabilities' are internal processes (organizational and managerial) embedded within an organization for responding to opportunities, threats and risks that have been identified by the 'sensing' processes and determined to be important and worthy of prioritising (Teece, 2007, p. 1326, 2018b, p. 6). The 'Seizing' process can result in refreshed or entirely new business models and will affect investments, adoption of new technologies, what products and services to produce, and organizational structures.

The interviewees (Chairmen, CEOs, and Vice Presidents) were asked to describe how Saudi organizations make decisions regarding new opportunities, threats and risks, and how might they improve these processes? They identified seven themes.

i. Linkage to Saudi Vision 2030

The Saudi Government exercises tight governance controls over Saudi organizations to ensure alignment with the Saudi Vision 2030. Government directions, policies, goals, and

objectives embrace performance measures that are key to the implementation of 'Saudi Arabia's Vision 2030'. Consequently, Saudi organizations continually ensure that there is a 'direct line of sight' between their strategic planning and Government set targets.

> *'Saudi organizations go to considerable lengths to ensure that their internal decision-making process delivers outcomes that align with Vision 2030.'*

ii. Agility

'Seizing' capabilities involves making timely decisions (D. Li & Liu, 2014, p. 2794) to avoid missing opportunities and to mitigate against threats and minimize risks successfully. Although eighty-five per cent of survey respondents scored 3 – 4 for the question, *'Seizing is a key capability to ensure the prompt and appropriate action to realise opportunities and to counter threats and risks'* (mean 3.20 std. 1.013), there is an impression that slow decision-making is common among Saudi organizations.

> *'Decision-making processes typically lack agility, so consequently, the process is slow, prone to inexplicable delays, and laborious. Agility is associated with risk adversity, but also to an element of reluctance to explicitly trust subject matter experts and a cultural aspect of consensus among decision-makers as a prerequisite to decisions.'*

Survey responses added weight to this perception. Sixty per cent of respondents scored 2 – 3 for the question, *'Organizations are able to seize most business opportunities when they emerge'* (mean 3.11 std. 0.994), indicating that business opportunities are routinely loss due to inadequate seizing capabilities. Likewise, sixty-five per cent of respondents scored 2 - 3 for the question, *'Organizations are able to capture new R&D opportunities whenever they appear'* (mean 2.81 std. 1.062), and indicating a failure of seizing capabilities to realize advantages from breakthrough technologies or products. However, the eighty-four per cent score of 2 - 4 for the question *'Organizations are able to grab new product development opportunities resulting from changes in technologies'* (mean 3.05 std. 1.064) indicates a strong reliance on external technologies for breakthroughs in product development.

iii. Management structure

Organizational structures and the people within them are critical to how the organization designs, builds, updates and deploys DC (Teece et al., 1997). Organizational

structures, procedures, designs and incentives, are constraints/enablers of seizing capabilities that influence the ability to seize new opportunities, (Zhang & Wu, 2016, p. 175).

There is a convergence of organizational culture and management structure influence on seizing capabilities described later in the discussion. However, in this context, interviewees expressed concern about management structure issues resulting from appointments of under-qualified people into senior decision-making positions.

> *'Decisions are made by people because of the importance of their position, not because of their experience and knowledge, and not always for the benefit of the organization or its shareholders.'*

iv. Fact-based

Seizing capabilities requires the ability of leadership to make sense of new knowledge and to integrate it with existing knowledge so that the existing capabilities of the organization can be fully utilised before making new investments (Prieto et al., 2009, p. 316). Interviewees gave examples of major investments that gave little or no return on investment while existing capabilities that could have provided the same or similar outcome lay underutilised. Interviewees also gave examples where new opportunities were ignored because the organization had already made substantial investments on technologies that continued to provide a diminishing rate of return – *'program persistence'* (Teece, 2007, p. 1327). When asked if Saudi *'Organizations are not constrained by past decisions in making new strategic decisions',* 70% of survey respondents scored 1 - 3 (mean 2.79 std. 1.131), indicating a strong persistence with past decisions. There is a cultural aspect to this, in that; an acknowledgement that a past decision is no longer relevant is paramount to an admission of failure.

Fact-based decision-making requires an organizational culture of trust, where the opinions of internal 'experts' are respected. Interviewees reported that senior executives lack the analytical abilities to understand the knowledge they have available to them and often find it uncomfortable when confronted with facts that do not match their preconceptions. One explanation for this phenomenon is the role that relationships or 'wasta' play in obtaining the prerequisite consensus in the decision-making process.

> *'Saudi organizations have the data gathering capability, but they typically lack the analytics capabilities, and the ability to present data in a manner that executives can understand and use.'*

Interviewees indicated that internal knowledge is not utilised in decision-making processes.

'There is a lot of data "sitting" there, and nobody is doing anything about it.'

v. Management style

The work of Williams (2008) concluded that the dominant leadership style in the Middle East is command and control style. Williams (2008) argues that this coercive leadership style *'quashes innovation, and crushes employee motivation, initiative, and willingness to accept accountability'*. Consequently, Saudi organization are failing to realize the full potential of the talent hidden within their employees. Interviewees expressed the sentiment that,

'The 'top-down' management style found in the larger Saudi organizations needs to change to embrace reflection, empowerment, and entrepreneurialism practices.'

Saudi organizations typically exhibit a lack of recognition of the important element of *'co-created value'* that comes from an inclusive, collaborative and partnership style of leadership (Chang et al., 2015, p. 280). In addition, the management style of many Saudi organizations fails to create the *'safe environment'* necessary for reporting failure by lower-level employees (Henisz, 2016, p. 193). In essence, bias and fears of self-preservation are the principal drivers of the dominant management style in Saudi organizations. These issues are reflected in the inability of Saudi organization to resolve conflicts in their decision-making process and to make timely decisions. For example, sixty-four per cent of survey respondents scored 2 - 3 for the question *'Organizations quickly deal with conflicts in the strategic decision-making process'* (mean 2.71 std. 1.100). In addition, sixty-five per cent of survey respondents scored 2 - 3 for the question *'Organizations make timely decisions to deal with strategic problems'* (mean 2.81 std. 1.036). An explanation for this phenomenon lies within the organizational culture and the level of trust that exists across the depth and breadth of the organization that facilitates uninhibited disclosure of knowledge and open and frank discourse (Fainshmidt & Frazier, 2017, p. 550).

vi. Market

The principal objectives of the Saudi Government's Saudi Vision 2030 centre around growth, value-adding and job creation. However, achieving these objectives requires Saudi organizations to look beyond the traditional domestic market.

'with a few obvious exceptions (oil & gas), Saudi organisations have focused almost entirely on supplying the domestic market.'

Sixty-seven per cent of survey respondents scored 2 – 3 for the question *'Organizations are able to catch many new opportunities available in the market'*, (mean 2.97 std. 0.900). This reflects Saudi organizations missing new market opportunities within the Region.

vii. Risk adversity

Saudi's may have a reputation for being fatalistic; however, fear of failure has a dominant influence when it comes to making business decisions. The larger and more mature Saudi organizations such as Saudi Aramco are the exemplars of most management processes, including decision-making.

'Saudi organizations are historically risk-averse.'

While Saudi decision-makers recognize that growth will require expansion outside of the Saudi domestic market,

'the geopolitical situation and instability in the region is a key factor in risk management.'

6.2.4 Reconfiguration Capabilities

As with sensing and seizing capabilities, there is no specific mention of 'reconfiguration' capabilities in the original work on DC, although it is also assumed to be one of the *'organizational and managerial processes'* (Teece et al., 1997). The 'reconfiguration' capabilities are internal processes (organizational and managerial) embedded within an organization for acquiring new, divesting old, and redeploying existing assets (tangible and intangible), and restructuring the organization so that it continually aligns with the changing business environment in which the organization operates (Teece, 2007, p. 1335).

The interviewees (Chairmen, CEOs, and Vice Presidents) were asked to describe how Saudi organizations manage change, and how might they improve these processes. They identified six themes.

i. History of success in managing change

The ability to manage environmental change is a critical attribute of DC, but it requires avoidance of pre-existing *'core rigidities and capability traps'* (D. Li & Liu, 2014, p. 2798). Given that seventy-five per cent of survey respondents scored 2 – 4 for the question *'Managing change and the reconfiguration of assets is a key organizational capability'*, (mean 3.17 std. 1.212), there is inconclusive evidence that Saudi organizations have strong change management capabilities. The interviewees support this position.

'Saudi organizations currently lack strong change management capabilities.'

'Managing change is a major issue for Saudi organizations.'

Given that seventy-nine per cent of survey respondents scored 2 – 4 for the question *'Organizations constantly align their management methods, business models, and structures to the changing business environment'*, (mean 3.03 std. 1.162), there is inconclusive evidence that Saudi organizations continually refresh and reconfigure their asset portfolio to align with the changing business environment. Interviewees supported the argument that Saudi organizations do not manage change projects effectively.

'Many projects fail because we do not handle change management well.'

'Unfortunately, the company is not very effective at managing change in terms of achieving beneficial outcomes.'

One explanation for this is that Saudi organizations typically hold onto existing asset portfolios, business models and organizational structures to the point where they are no longer relevant to the evolved business environment. Consequently, change becomes a 'radical' transformation rather than an incremental or continual one (Teece, 2007, p. 1335).

ii. Business process improvement

There is apparent consensus among interviewees and survey respondents regarding the rigidity of business processes within Saudi organizations. Sixty per cent of survey respondents scored 2 – 3 for the question *'Organizations encourage employees to look for and implement incremental changes to existing practices, products, and asset operations'*, (mean 3.00 std. 1.139). Interviewees indicated that improving current asset portfolios is the dominant focus of Saudi organizations.

'Most Saudi organizations relate change management and transformation to business process improvement.'

'The major driver for change [in Saudi organizations] is the efficiency of the current assets rather than the development of new products.'

Reconfiguration of assets requires combing new and existing knowledge and embedding the reconfigured knowledge in processes, products and strategies (Prieto et al., 2009, p. 320).

iii. Innovation

Ability to align with the changing environment and implement innovative changes requires a level of trust within the organizations that encourages employee commitment (Fainshmidt & Frazier, 2017, p. 554). Survey respondents indicated that it was not common practice for *'Organizations encourage their employees to replace outdated knowledge'*, (scored 2 - 4 mean 3.19 std. 1.087). Interviewees supported this perspective.

'There is a reticence to adopting disruptive technologies and developing new products.'

'Saudi organizations prefer to continue using technology they are familiar with.'

iv. Top-down management of change

Management style influences how the management of change occurs within Saudi organizations. The coercive management style described by (Williams, 2008) contributes to a top-down approach to managing change in Saudi organizations. This approach pays little regard to the benefits that an integrative approach to change that galvanizes all stakeholders can provide (Nieves & Haller, 2014, p. 227), and is a significant factor in the high rate of failure of transformation projects.

Seventy-six per cent of survey respondents scored 2 – 4 for the question, *'Organizations encourage their managers and supervisors to support their employees if they want to try new ways of doing things'*, (mean 2.97 std. 1.230), which suggests an even spread of opinion that employees receive positive support for embracing change. Interviewees took the viewpoint that change more likely comes from the top with little or no initial participation from lower-level employees until the change has failed.

'Change is normally managed from the top down, but when they get half way through the journey, they realise that they are not doing so well with less engagement with the bottom.'

v. Organizational culture

Organizational culture of Saudi organizations has evolved albeit rapidly over a relatively short period compared to counterparts in European and Northern American economies. The transition from 'traditional' to 'modern' Saudi Arabia dates back only to the mid-20th century with the exploitation of oil resources in the Eastern Province. Before the start of this transition, Saudi culture was nomadic and tribal. Despite the 'Western' influence on the organizational culture of the early 'modern' Saudi organizations particularly Saudi Aramco, which became the exemplary for all major Saudi organizations that followed, management retained many of the traditional methods of leadership.

> *'The relationship between organizational culture and change is significant in a Saudi Arabian context where traditional Saudi culture assumes stability and trust in tribal leadership established from aeons of surviving in a harsh environment where what worked in the past should also work in the future.'*

Fainshmidt and Frazier (2017, p. 556) confirmed the positive relationship between an organizational culture that fosters trust and the organization's reconfiguration capabilities. They found that successful reconfiguration processes exist in organizations that encourage the free exchange of opinions and intentions. They argue that a culture of trust reduces barriers to effective communication, such as organizational silos and conflicts. Eighty per cent of survey respondents scored 2 – 4 for the question *'Organizations encourage all sections of the organization to support each other's change initiatives'*, (mean 3.11 std. 1.146), suggesting inconclusive support to Fainshmidt and Frazier's notions of a climate of trust within an organizational culture.

vi. Organizational structure

A sentiment expressed by interviewees is that Saudi organizations typically expect 'line' managers to implement 'imposed' change while at the same time meeting existing operational production targets. Their concern is that most operational managers lack specific change management training, and while they typically shoulder all responsibility for failure; they receive limited reward and recognition for successful outcomes.

> *'Saudi organizations [should] create separate entities (departments) who would focus primarily on implementing change.'*

6.2.5 Organizational culture

In the original work on DC, culture is described as *'the values and beliefs that employees hold',* and as potentially providing a substitute system of corporate governance (Teece et al., 1997, p. 520). The strength of organizational culture influences the organizational ability to deal with environmental dynamism. High levels of anxiety associated with rapid change require corresponding aspects of organizational culture compared to organizations experiencing gradual, incremental change (Teece, 2007, p. 1335).

The interviewees (Chairmen, CEOs, and Vice Presidents) discussed how the culture in a Saudi organization contributes to or constrains its capabilities to change and transform. They identified seven (7) themes.

i. Values and Beliefs

Study participants expressed a strong belief that the values and beliefs of an organisation are a significant component of organizational culture. Seventy-five per cent of survey respondents strongly supported this belief by scoring 3 – 5 for the question *'Organizational culture (values, beliefs, and trust) play a significant role in the capability of Saudi organizations to deal with change'* (mean 3.77 std. 1.277). However, there is also recognition by participants that the culture of Saudi organizations is currently experiencing extreme pressure. The predominant pressures are coming from a sizeable well-educated population of 'youth' (60% under 35 years of age), who are expecting a share of the Kingdom's wealth (jobs), and the changing roles and expectations of educated Females.

> *'One of the principal reasons why organizational culture in Saudi Arabia is in a state of flux is the Kingdom's demographics.'*

Changes in the demographic make-up of Saudi organizations are occurring. There are more employees under 35 years of age, and an increasing number of female employees, albeit not significant in Western terms. Some of this change is undoubtedly organic while the rest arguably results from compliance with Saudi Government imposed quotas

> *'Most Saudi organization have a large percentage of their workforce under 35 years of age.'*

Senior management's role is to establish a standard set of shared values and beliefs that the entire workforce agrees with and are willing to comply with. However, to gain

complete acceptance requires the adoption of effective communication and promulgation strategies to all stakeholders, both internal and external (Teece et al., 1997).

> *'The values and beliefs of an organization are typically given top-level management attention and promulgated down to the employees (top to bottom) in the form of publications, posters, events and announcements.'*

This statement reflects the view that a casual visitor to a Saudi organization will observe many visual expressions of the organization's values and beliefs that may not coincide with the experiences of internal employees.

ii. Trust and Respect

The level of trust and collaborative support within an organization is a reflection of the organization's social norms. Those organizations with the highest levels of trust will normalise the sharing of opinions (positive and negative) and the free exchange of knowledge. High levels of trust will reduce the likelihood of misunderstanding of intentions and result in lower levels of conflict and dysfunctional behaviour, and ultimately lead to greater integration of effort and utilization of resources (Fainshmidt & Frazier, 2017, p. 554; Prieto et al., 2009, p. 317).

Survey responses gave no indication of strong levels of trust and respect in Saudi organizations. Seventy-five per cent of survey respondents scored 2 – 4 for the question, *'There is a high level of trust throughout Saudi organizations'*, (mean 3.09 std. 1.243), and seventy-five per cent of respondents scored 2 – 4 for the question, *'Employees have a high level of trust in their managers'*, (mean 2.88 std. 1.065). Responses to these two questions indicate inconclusive evidence on the levels of trust and respect across Saudi organizations.

Interviewee sentiment was more definitive and critical of the ability of senior management to trust and respect the opinions of internal sources.

> *'The lack of trust, exhibited by many Saudi top management, in the opinions of others within their organizations is reflected by their almost 'addiction' like practice of engaging with external consultants.'*

Participants supported the Researcher's preconceptions regarding the influence that personal relationships play in organizational culture. Once established, these personal relationships will influence all aspects of organizational culture, including siding with decision making irrespective of the existence of contradictory analytical facts. Survey

respondents expressed strong support (69% scored 3 – 4) for the question, *'Employees trust the competence of others and reciprocate faith and trust'*, (mean 3.19 std. 0.996). However, much of this relates to personal relationships and not to all colleagues. Interviewees were sceptical.

> *'Personal relationships and perceptions of individuals is very influential in decision making. Decisions are usually made at a personal level based on perceptions of the value of the contribution, and in many cases, decision-makers can be pre-judgemental about proposals, especially when they hold a specific perception about the individual [making the] proposal proponent.'*

iii. Empowerment

Autonomy and empowerment of employees positively influence DC. It is dependent on the level of trust and respect the organization has for their abilities to act independently of continuous supervision (Prieto et al., 2009, p. 321).

Interviewees held a positive perspective on the trend in Saudi organizations to empower employees through the application of technology in systemizing decision making and approval processes. They argue that technology is making the approval steps completely transparent and removes past practices of approvers 'sitting' on approvals. They argue that Saudi organizations are encouraging greater 'bottom-up' involvement in change but admit to generational barriers.

> *'there is a trend towards a more 'bottom-up' approach to management of change, but this is creating some challenges during this transition period because of multi-generational conflicts, with each generation having different desires and ways of doing business.'*

> *'There is a more open culture now, technology-driven, more democratic, less rigid organizational structures, and more dynamic and resilient organizations.'*

Survey responses indicate a strong reluctance for Saudi organizations to empower employees. Sixty-two per cent of survey respondents gave a negative score 2 – 3 for the question, *'Managers typically allow subordinates autonomy to do their work'*, (mean 2.95 std. 1.089). Eighty per cent of survey respondents gave a mixed score 2 – 4 for the question, *'Employees are typically able to self-manage their time and tasks'*, (mean 3.12std. 1.102). Sixty-four per cent of survey respondents gave a negative score 2 – 3 for the question,

'Employees can typically take action on their tasks without referring to their supervisor', (mean 3.05 std. 0.999).

iv. Performance

Historically, performance targets and KPIs drive Saudi organizations, and failure to meet performance targets, for whatever reason, is viewed as a personal failure by individuals to 'keep their promises' and reflects on their calculus of trust. Eighty-five per cent of survey respondents gave a mixed score of 2 – 4 for the question, *'People are held accountable for their promises'*, (mean 2.92 std. 1.100). However, interviewees clearly indicated the presence of a 'performance culture' and the influence that the Saudi Government has on setting targets and KPIs.

'A performance culture is evident in most Saudi organisations, and this attitude is embedded in Saudi Government Vision 2030.'

v. Experiential learning

As mentioned under *Performance* (above), Saudi organizations exhibit strong evidence of a performance culture in which failure to meet targets reflects poorly on individuals. Fear of failure is the predominant constraint on Saudi organizations endorsing experiential learning and taking any type of risky decision.

'It is better not to do anything than to fail doing something'.

Contrast this sentiment with the scores of the survey respondents, who were clearly undecided on the question, *'Managers typically trust their subordinates to make good decisions'*, eighty per cent scored 2 – 4 (mean 3.00 std. 1.151). Interviewees revealed a darker side – low tolerance for mistakes.

'Most Saudi organizations strive to achieve perfection. As a consequence, they typically have a low tolerance for people making mistakes.'

vi. Gender

One of the most significant triggers for cultural change within Saudi organizations has been the increased inclusion of females in the Saudi workforce.

'There is an economic argument that the inclusion of females in the workforce will lift a nation's GDP by as much as 5%.

This argument is easy to observe in the Saudi Arabian context where females have historically been restricted to working in acceptable female roles such as nurses and teachers. In addition, the mobility of females was restricted because they could not drive. Greater female participation in the workforce means increased household income, and the elimination of expatriate drivers has given Saudi households a significant boost to their discretionary funds.

Female participation in higher education has been high for the past decade; however, on average, 70% of female graduates have not been able to participate in the Saudi workforce. Many Saudi leaders consider past failure to utilise this pool of highly educated females in the Kingdom as a 'lost opportunity'.

> *'The Saudi workforce is having a very positive effect on organizational culture, and is essentially recovering a lost opportunity for Saudi Arabia.'*

An unintended positive consequence of greater female participation in the workforce has been an increased sense of competition by male employees who now feel that they need to demonstrate their competences. Females are proving themselves better performers than their male counterparts and are likely to be diverted less by social distractions generally associated with male employees.

> *'Whereas in the past, male-dominated organizations exhibited high levels of complacency, the introduction of high performing Females is creating greater competition.'*

vii. Tenure of employment

Historically, the 'employers-of-choice' for Saudi 'graduate-entry-level-new-hires' was loosely ranked in descending order from Saudi Government, Saudi Aramco, banking and financial industry, petrochemical industry, family business followed by 'others'. In most cases, the primary selection criterion for job seekers centred on 'long-term tenure' and benefits. In addition, until recently, the Saudi Labour Law protected Saudi employees from termination and redundancy. However, there is a noticeable recent trend for graduates to seek less secure employment opportunities. Graduates are less loyal to a single employer for their entire career than previous generations, and they are prepared to trade job security for better financial rewards and better developmental opportunities.

'Young people do not expect to be permanent employees, but often prefer to work as a contingent employee on projects. They work on those things that they like to do, they are motivated to learn on their own discretion, and they will execute.'

6.2.6 Organizational learning

Organizational learning plays a predominant role in the building of DC. The original work on DC emphasised the importance of knowledge acquisition, knowledge generation, and knowledge integration processes in the development of managerial capabilities, and VRIN capabilities (Teece et al., 1997, p. 510). Saudi organizations, particularly the major ones, have historically invested significant resources into the 'development of their employees' (Aramco Services Company, 1998). It is no surprise therefore that seventy-three per cent of survey respondents would strongly agree (score 3 – 5, mean 3.51 std. 1.167) with the question, *'Organizational learning capabilities play a significant role in the capability of Saudi organizations to deal with change'*.

The interviewees (Chairmen, CEOs, and Vice Presidents) discussed how well developed are Saudi employees' abilities to learn new things and sense new opportunities, threats, and risk. They identified nine themes.

i. Knowledge acquisition

Knowledge acquisition is a collection of routine processes that continually scans the external and internal environments for information that could influence capability building. However, in the Saudi Arabian context, fifty-seven per cent of survey respondents disagreed (scored 2 – 3, mean 2.92, std. 1.171) with the question, *'*[Saudi] *Organizations have routines to identify, value, and import knowledge from internal and external sources'*.

The corporate body-of-knowledge (tacit and explicit) is often a neglected source of knowledge (Nieves & Haller, 2014, p. 230). Interviewees stated that the corporate 'body-of-knowledge' is typically underutilised and undervalued.

'Saudi organizations contain a high level of latent knowledge that typically goes underutilized.'

Survey respondents supported this opinion. Sixty-four per cent disagreed (scored 2 – 3, mean 2.79, std. 1.106) with the question, *'Organizations are effective in transforming existing information into new knowledge'*.

Interviewees acknowledged the pool of knowledge held internally by employees that remains dormant and is rarely actively sought out by senior management and incorporated into corporate decision-making processes.

> *'Knowledge and experience from the shop floor "experts" is rarely shared with senior management, who would prefer to bring in external consultants'*

Continual reviews of existing operational processes are a useful source of internal knowledge, such as opportunities for improvement. However, in a Saudi Arabian context, eighty per cent of survey respondents gave mixed results (scored 2 – 4, mean 3.11, std. 1.011) for the question, *'Organizations continually review and improve their operational processes'*. These results indicate that operational reviews of processes are not standard practice across the majority of Saudi organizations.

External consulting companies have historically been a significant source of knowledge for Saudi organizations. However, one interviewee likened this practice more to an *'addiction'* than a practice. Other interviewees argued that the search for *'best practices'* should start within the Kingdom. While others expressed concern that engaging external consultants was a *'cookie-cutter'* approach that provided only *'cut-and-paste'* solutions. Nevertheless, external sources of knowledge are critical for sensing new opportunities, threats and risk.

> *'The more we engage with external sources of knowledge, the more knowledge we have about potential opportunities, threats and risks.'*

Paradoxically, fifty-seven per cent of survey respondents disagree (scored 2 – 3, mean 2.81, std. 1.062) with the question, *'*[Saudi] *Organizations are effective in developing new knowledge that has the potential to influence service development'*.

ii. Knowledge dissemination

Knowledge dissemination has a positive impact on the development of DC; however, the level of dissemination is dependent on the prevailing environmental dynamism. Building DC in circumstances of high environmental dynamism require rapid acquisition and dissemination of new knowledge and potentially unstable processes. Existing knowledge and stable processes are sufficient to build capabilities in stable to moderately dynamic environments. (J. Li & Lee, 2015, p. 671). Knowledge dissemination across organizational boundaries, as in the case of joint ventures, is dependent on communication protocols and established processes (Schilke, 2014, p. 190).

Saudi organizations have established repositories of knowledge from internal and external sources, but the management of knowledge remains a challenge.

> *'the challenge for most [Saudi organizations] is how to manage that knowledge; how to store it, make sense of it, and disseminate it to decision-makers.'*

Survey respondents supported this view (56% scored 2 – 3, mean 2.79 std. 1.177) disagreed with the question, *'Organizations have appropriate routines to assimilate new knowledge'*, and (60% scored 2 – 3, mean 2.85 std. 1.123), disagreed with the question, *'Organizations are effective in utilizing knowledge in new products and services'*.

Organizational structure, culture and leadership capabilities affect knowledge dissemination.

> *'The silo nature of many larger Saudi organizations results in limited knowledge flows across divisions within the organization, mostly knowledge flows are kept to within silos (divisions or departments). Most knowledge flows between silos and other entities is dependent on personal relationships and networks.'*

Sharing of procedural knowledge between internal divisions and departments is dependent on shared processes, effective integration and coordination capabilities (Nieves & Haller, 2014, p. 230).

> *'There is no structured method for knowledge transfer between entities within the organization.'*

Interviewees acknowledged that joint ventures provide an opportunity for knowledge transfer; however, the survey responses were inconclusive (84% scored 2 – 4, mean 2.95 std. 1.077), to the question *'Knowledge of technologies is shared across all subsidiaries/divisions of Saudi organizations'*, suggesting the lack of established knowledge dissemination processes or that processes are not well coordinated or complied with.

Survey respondents disagreed (58% scored 2 – 3, mean 2.81, std. 1.147) with the question, *'Knowledge of manufacturing activities is shared across all subsidiaries/divisions of Saudi organizations'*, and disagreed (64% scored 2 – 3, mean 2.93 std. 1.093) with the question, *'Knowledge of sales, marketing and distribution is shared across all subsidiaries/divisions of Saudi organizations'*.

While empirical studies indicate that knowledge sharing has a positive influence on product and process innovation (Schilke, 2014, p. 185), in the Saudi Arabian context, there

was no clear support from survey respondents (78% scored 2 – 4, mean 2.87, std. 1.178) with the question, *'Knowledge of new product design and development is shared across all subsidiaries/divisions of Saudi organizations'.*

iii. Knowledge management – technology

Only one of the interviewees mentioned that their organization was utilizing technology via a specific ideation engine to allow people to resolve challenges (risks), resolve threats, and look for new opportunities.

iv. Employee responsibility for learning

Researchers acknowledge that the development of employee skills-sets creates a 'pool of knowledge' necessary to continually align the portfolio of assets with the changing business environment (Nieves & Haller, 2014, p. 230). However, in a Saudi Arabian context, individuals are responsible for their professional development, even though organizations include 'becoming a learning organization' as their aims and objectives. In essence, the focus of organizational learning is on 'ordinary capabilities' not 'dynamic capabilities'.

> *'[They] make the right noises about moving more and more towards becoming a learning organization.'*
>
> *'However, in reality, it falls to the employee's personal desires to develop the skills required for the future.*

In line with the 'performance culture' discussed earlier, Saudi organizations focus on improving existing business processes rather than developing future capabilities.

> *'in most Saudi organizations, employees are required to get on with their job, to do the job and finish the job.'*

A core component of operational excellence is well-documented and repeatable processes and well-trained employees who instinctively comply with these processes. Survey results indicate that well-documented procedures and well-trained employees are standard across all Saudi organization. Sixty-three per cent of survey respondents (scored 3 – 4, mean 3.16, std. 1.128) for the question, *'Organizations have well-documented routines and procedures for performing operational processes'*, and sixty-nine per cent (scored 3 – 4, mean 3.21, std. 0.977) for the question, *'Employees are knowledgeable and experienced in performing all operational processes'.*

v. Professional Associations

In 'The West', young professionals would be encouraged to participate in professional associations such as the British Academy of Management (BAM), Chartered Institute of Personnel and Development (CIPD) or the Academy of Management (AOM), and to participate in their respective Continuing Professional Development (CPD) programmes. Membership of these associations provides professionals with many benefits, including opportunities to network with peers, opportunities to attend conferences and learn from external thought leaders, and pathways to recognition and certification of capabilities to international standards. A group of HR practitioners established The Arabian Society for Human Resource Management (ASHRM) for similar purposes in Saudi Arabia. However, the success of ASHRM fluctuated over time, depending on the availability and commitment of the volunteers running it. At the peak of its success, ASHRM ran nine (9) monthly dinner meetings each year, held a conference every other year, and graduated over three hundred Saudis from HRM and HRD master degree programs. However, without the support of generous sponsors and the commitment of willing volunteers, professional associations find it hard to flourish.

'There is little interest in professional associations like IEEE and SPE, unless the employees are part of a large organization that pushes its employees to participate.'

In the Saudi Arabian context, entrepreneurs see themselves as unique and not part of any profession. Consequently, they will tend to relate associating with other entrepreneurs, as opportunities for sharing issues associated with entrepreneurialism such as obtaining funding, and marketing routes.

'Entrepreneurs are more interested in participating in special events that relate to entrepreneurialism rather than professional associations.'

vi. Organization Culture

Historically, Saudi Arabia was an isolated tribal country in which tribal structures and cultures determined knowledge and the methods for acquiring it was. However, today many young Saudis attend overseas universities and on their return question past practices, theories, and tribal relationships. Sending young Saudis abroad gave them the freedom to explore possibilities, and expanded the range of experiential learning opportunities. However, on their return to Saudi Arabia, the constraints of their organizations' learning approach replace the freedoms they experienced abroad.

'[Organizational learning requires the] proper organizational culture and the proper structure'. 'Innovation requires that people be given 'headroom' or 'space', so they have the opportunity to learn or to experiment. Unfortunately, this does not seem to exist.'

vii. Future of jobs

Saudi Arabia is experiencing the same or similar stresses as other societies in attempting to predict the future of jobs. The adoption of new technologies such as artificial intelligence and process automation, the infusion of higher numbers of females in the workforce, the shifting emphasis away from the traditional extraction industries, combined with Saudi Government objectives of job creation, are all adding to the environmental complexity, and making the definition of future jobs that much more difficult.

'In the future, roles that are based on processes are likely to get replaced by automation. The workforce in the future will be well equipped but different.'

Saudi organizations are countering this uncertainty by creating partnerships with universities to identify the job skills that will be required for the future. However, the lengthy lead-time between identification of a skill requirement and the attainment of that skill presents a common problem for Saudi organizations.

'Future jobs required by the company are identified, and students sent away to study for five (5) years with the expectation that they will return with their specialised skills and knowledge'.

With an estimated sixty per cent of the Saudi population under the age of 35 years, combined with an increased level of female participation in the workforce, the competition for jobs has become very competitive.

'Increased job competition among the new generation is a major driver towards self-development.'

The Saudi Government is promoting the tourism and hospitality industry as an opportunity for growth and job creation. Estimates suggest that expansion in this industry could create as many as 1.5 million new jobs. However, Saudis have historically considered jobs in the services industries as less worthy.

'The problem with this notion is the mentality of the Saudis, which constrains their willingness to act as servants to other nationalities. That is a customer service question.

Saudis typically want to have the service, they want to enjoy tourism but they do not particularly want to be part of it. It is a cultural thing.'

'The tourism industry jobs are not seen as high paying opportunities'.

viii. Knowledge providers

In the Saudi Arabian context, training providers are either internal or external, and external providers are either domestic (within Saudi Arabia) or overseas. Interviewees consider that the training and development function in most Saudi organizations have retained their historical focus on operating the existing asset portfolio. They argue that these internal providers have not matured in pace with what is required to cope with the number and rate of changes occurring within the Kingdom.

'Training and development is still done in a very traditional manner, people are still obsessed with attending programs and obtaining international certificates without ensuring that they have gained the right skills.'

Interviewees also expressed concern that Saudi organizations 'over trust' 'brand recognition' as the primary selection criterion of training providers. They observe that Saudis assume that receiving a certificate from an internationally branded training provider is an accurate indication of their skills and competencies. They noted that the combination of an ambitious young generation, and what amounts to false statements of attainment of competencies, is creating a risky situation.

'People who were trained overseas in reputable training institutions – in Canada, Australia, UK and the USA, particularly as part of the late King Abdullah's scholarship program, generally benefited from good quality training.'

ix. Vocational Vs tertiary training

A very high percentage of Saudi high school graduates are more likely to pursue tertiary education rather than vocational training. This reflects Saudi society's lower status for vocational roles. A challenge is the substandard quality of vocational training in Saudi Arabia.

'Two factors affect vocational training in Saudi Arabia, the level of interest in vocational training is low, and the actual quality of vocational training in Saudi Arabia is substandard.'

Interviewees argue that the Saudi educational system needs to be more vocationally oriented and that Saudi organizations need to be more influential in the design of university curricula. They argue that *'graduates are typically not job ready'*, that is, they do meet the job skills expectations of industry, and there is no talent development pipeline from the Saudi education system. This has an unintended consequence on Saudi job nationalisation because the missing skills need to be imported.

6.2.7 Leadership capabilities

The original work on DC featured leadership capabilities as an element of managerial capabilities (Teece et al., 1997, p. 510). Organizational leadership has distinct roles in decision making, and galvanizing employees to a common set of shared values, goals and objectives (Teece, 2007, p. 1334). However, the building and continual refreshing of DC within an organization is a reflection of the *'managerial, entrepreneurial, and leadership skills of the firm's top management'* (Teece, 2014a, p. 16). As the asset portfolio changes to meet the needs of environmental change, organizational leadership must have the capabilities to ensure that old and new processes, systems, and structures are complementary and not in conflict (Teece, 2007, p. 1335).

Entrepreneurial leadership skills include the capability not only of identifying new opportunities, threats, and risks but also of articulating a vision and convincing others, that the investment of time and resources is worthwhile (Schoemaker et al., 2018, p. 27).

The interviewees (Chairmen, CEOs, and Vice Presidents) discussed how leadership capabilities assist or constrain an organization's capabilities to change and transform. They identified five themes.

i. Leadership style

The coercive style of leadership identified by Williams (2008) is typically characterised by a controlling influence, a lack of entrepreneurial skills, and a tendency to 'blame' employees for failures. Survey results (62% scored 3 – 4, mean 3.15 std. 1.123) for the question, *'Managers ensure that the work of all employees is coordinated'* indicate a strong controlling influence of Saudi leaders.

This style of leadership is concerned about the 'loss of face' associated with failure, and they will associate changing past decisions as a failure, so they become 'risk adverse'. Survey respondents supported this perspective and agreed (47% scored 4 – 5, mean 3.49 std. 1.107) with the question, *'Managers do not want their "view of the world" to be questioned'*.

> *'Saudis always deferred to their leaders for direction and decision-making, irrespective of the leader's capabilities, grasp of the facts, or ability to galvanize the people to a vision.'*

The control and hierarchical aspects of leadership style, the level of support and interaction that leaders have with employees, the willingness of leaders to accept a reasonable and calculated risk, and the contribution of leaders to organizational climate all influence an organization's capabilities to deal with change (Prieto et al., 2009, p. 321). To this end, survey respondents strongly agreed (85% scored 3 – 5, mean 3.8 std. 1.103) with the question, *'Managerial capabilities play a significant role in the capability of Saudi organizations to deal with change'*.

A supportive leadership style fosters a proactive dialogue with employees. Supportive leaders establish a trusting environment that facilitates the honest sharing of opinions and knowledge. They encourage employees to explore solutions to problems. They ensure that employees have access to all the resources they need in order to succeed. They provide employees with developmental opportunities, and, finally, they encourage a team spirit among all employees (Prieto et al., 2009).

> *'There is a real sense that leadership is on an improvement curve due mainly to their hopes and aspirations for the new generation of leaders.'*

In the Saudi Arabian context, survey respondents agreed (58% scored 3 – 4, mean 3.25 std. 1.140) with the question, *'Employees are encouraged to problem solve'*. However, survey respondents gave mixed support for the notion that Saudi leaders are becoming supportive. Survey responses (80% scored 2 – 4, mean 2.99 std. 1.109) for the question, *'Managers ensure that employees have access to all the resources, and support they need to complete their tasks'*, indicate no definite leaning of leaders to resource employees adequately. Likewise, responses (80% scored 2 – 4, mean 3.00 std. 1.090) for the question, *'Managers promote a strong sense of "team" among employees'*, give further evidence of the 'power distance' relationship between leaders and employees. Finally, responses (80% scored 2 – 4, mean 3.01 std. 1.121) for the question, *'Managers provide developmental opportunities to employees'* supports the earlier discussion (above) about employee responsibility for their personal development.

ii. Leadership team

The formal and informal structure and interactions of the top management team influence organizational adaptability; how new capabilities are identified and built; and, the speed and direction of innovation (Teece et al., 1997, p. 521). The *'balancing and compromise'* aspects of decision-making teams in Saudi organizations is a constraint on innovative projects and supportive of *'program persistence bias'* (Teece, 2007, p. 1327).

> *'how we can adapt and work together is discussed at quarterly executive management meetings. We are learning how we can understand the individual issues and how can we understand the group issues so we can work together better'.*

iii. Entrepreneurial leaders

Entrepreneurial leadership relates to leadership capabilities of continually questioning the *status quo*, seeking new, improved methods, and initiating improvement interventions (Teece, 2012, p. 1398). A robust entrepreneurial culture will positively influence the building of DC (D. Li & Liu, 2014, p. 671). Characteristics of an entrepreneurial culture include encouraging employees to think creatively, and valuing the ideas and suggestions of employees. However, entrepreneurialism requires a supportive organizational culture (Lessard et al., 2016, p. 220).

> *'There are many entrepreneurs in Saudi Arabia, but a scarcity of entrepreneurial leaders in large Saudi organizations who will take an opportunity all the way through to implementation'.*
>
> *'There will be people who are willing to do that* [entrepreneurial leaders], *but the counter to them are people who want to keep the status quo'.*

Survey respondents supported the notion that Saudi organizations lack entrepreneurial leaders (68% scored 2 – 3, mean 2.71 std. 1.010), for the question *'Managers have entrepreneurial skills'*. As for fostering an entrepreneurial culture, survey respondents (55% scored 2 – 3, mean 2.99 std. 1.257) for the question *'Employees are encouraged to "think outside of the box"'*, and (64% scored 2 -3, mean 3.00 std. 1.053) for the question *'Employees' original ideas are highly valued'*.

iv. Start-ups

It is essential to recognize that the entrepreneurial leadership aspect of DC is different from that of entrepreneurial start-ups. In the DC context, entrepreneurial leadership has a

capital or economic management perspective in that it involves the continual alignment of assets to meet the changing environment (Teece, 2012, p. 1398).

In the Saudi Arabian context, Saudis who initiate entrepreneurial start-ups typically have limited leadership skills and experience.

'Many entrepreneurs come from a product development or engineering background, so their focus has typically been on building products rather than leadership issues.'

'As they start to grow their organizations, these young entrepreneurs recognize the importance of leadership, so they start to give it more and more focus.'

v. 'Wise Heads on Young Shoulders'

The ability of an organization to develop DC is dependent on how well they develop their leaders (Nieves & Haller, 2014, p. 230).

Saudi organizations look to the new generation for leaders, but there is no guarantee. Because 'leaders need to be built, people are not born leaders'.

Many large Saudi organizations have created learning and development centres. However, these centres rely on learning and development professionals providing traditional curricula because while they may be well intentioned, they lack the authority to implement changes.

'Leadership development should not reside in a single learning and development centre, but should be a blend of both formal and informal programs that incorporate greater interaction between leaders and employees. This approach would involve cross-functional discussion and engagement groups and knowledge transfer to young Saudi leaders included in the contracts of expatriate experts'.

6.3 Discussion of the results.

The challenge when interpreting the findings discussed above is to disassemble what is contextual and therefore unique to the Saudi Arabian context, and to what extent the conceptual model and the research methodology can explain any variations from previous studies. A combination of observation and interpretation strategies will counter these challenges and provide a fuller analysis of the behaviours, processes and outcomes being examined (Bazeley, 2012, p. 815).

NVivo produced a thematic analysis of the eighty-five pages of interview transcripts. SPSS AMOS confirmed the model fit of the constructs derived from previous empirical studies. SPSS 25 correlations between variables and regression analysis identified no common method variance (CMV) bias and identified the strength and direction of relationships, and causality.

The findings above confirm the conclusions of previous empirical studies regarding the influence that antecedents have on DC. However, the results indicate that in the Saudi Arabian context the accumulated benefits of organizational learning, organizational culture, and leadership capabilities currently do not significantly influence the capabilities of sensing new opportunities threats and risk, and seizing decision-making. However, they do significantly influence the reconfiguration of the asset portfolio. However, this analysis does indicate that Organizational Learning is the most significant influencer in sensing, seizing, and reconfiguration capabilities.

On the basis that a correlation coefficient (r) is considered small if r = .10 to .29, medium if r = .30 to .49, and large if r = .50 to 1.0. Analysis of the survey data confirms the expected strong positive relationships between the antecedents and DC. Organizational Culture and Sensing Capabilities (r = .630), Organizational Culture and Seizing Capabilities (r = .513), and Organizational Culture and Reconfiguration Capabilities (r = .741). Leadership Capabilities and Sensing Capabilities (r = .697), Leadership Capabilities and Seizing Capabilities (r = .590), and Leadership Capabilities and Reconfiguration Capabilities (r = .795). Organizational Learning and Sensing Capabilities (r = .715), Organizational Learning and Seizing Capabilities (r = .616), and Organizational Learning and Reconfiguration Capabilities (r = .802). In addition, there are strong positive relationships between the DC themselves - Sensing Capabilities and Seizing Capabilities (r = .681), Sensing Capabilities and Reconfiguration Capabilities (r = .688), and Seizing Capabilities and Reconfiguration Capabilities (r = .630). Suggesting that strength in sensing processes will influence the subsequent processes.

Although not determining causality, these results confirmed results from previous empirical studies. The standard multiple regression features of SPSS indicated that the antecedents explain 48.4% of the variance in Sensing Capabilities, 37% of the variance in Seizing Capabilities, and 70% of the variance in Reconfiguration Capabilities.

Organizational Learning makes the biggest contribution in each of these cases, Sensing Capabilities (standardized coefficient $B = .4$, $P < .020$), Seizing Capabilities (standardized coefficient $B = .387$, $P < .043$), and Reconfiguration Capabilities (standardized coefficient $B = .352$, $P < .008$).

The findings support the notion that Saudi Arabia is in a state of transition. For example, the evidence indicates a fluctuating level of environmental dynamism ranging from moderate to high dynamism based on the rate of change in technology and products and services; but low to moderate dynamism based on the predictability of customer needs and technology changes. These findings support the generalizability of the extended DC framework and the argument that it would be relevant to other countries facing the challenges of transitioning through periods of disequilibrium in their economic eco-system.

There is an apparent contradiction between the perspectives of several interviewees and those of the survey respondents on the sensing capabilities of Saudi organizations. This may appear *prima facie* to be a divergence of findings because of the mixed methods approach. However, in this study, one source is not wrong and the other correct, by considering all sources as a group, and recognizing that the interview data (qualitative) is enriching the survey data (quantitative), a more reliable conclusion is drawn (Bazeley, 2012). For example, there is consensus on the notion that sensing new opportunities, threats and risk is a crucial capability for long term survivability, but the interviewees introduced the aspect of organizational size as influencing the 'addiction on external consultants' for executing the sensing processes. Both sets of participants acknowledge the importance of knowledge acquisition as a sensing capability and acknowledge the lost opportunity in underutilisation of the latent pool of knowledge held internally. The interviewees added additional insights that sensing capabilities in Saudi organizations are constrained by a limited domestic market perspective and instability in the geopolitical situation in the region.

The conservative national culture of Saudi Arabia contributes to a reticence for innovation. The qualitative and quantitative data indicate that Saudi organizations display a high level of *'program persistence'* (Teece, 2007) and continually fall into *'success traps'* (Wang et al., 2015). That is, they prefer to continue with practices and technologies that have proven successful.

The findings present an image of decision-making processes in Saudi organizations that are characterised as slow, lacking analytical support tools to facilitate 'fact-based'

decisions, risk-averse, bureaucratic, and consistently failing to grasp worthwhile opportunities. Above all else, adherence by Saudi organizations to the strategic directions of the Saudi Government and compliance with their Saudi Vision 2030 aims and objectives in their decision-making is of paramount importance.

The individual's position and status rather than their qualifications are the principal criterion for appointments to management decision-making committees. Consequently, leadership struggles with the resolution of conflicts between decision-makers and cannot balance between 'old guard' and 'new generation'. Management structures that retain decision-making at the executive management level overlook the wealth of available internal knowledge, and the innovative advantages that come from employee empowerment.

Lack of employee empowerment reflects the 'power-distance' relationship aspect of organizational culture found in most Saudi organizations. Characteristics of 'power-distance' include low levels of trust and respect for the opinions of all employees, minimal, if any, opportunities for employees to voice their opinion, and consequential failure to realize the full potential of employees.

Saudi organizations have a history of failure in managing change and transformation. They do not give sufficient attention to the need for continual alignment of their asset portfolio with environmental dynamism and instead focus on improving the efficiency of their existing assets. This attitude reflects the American tendency for 'strategic leaps' instead of the incremental approach more common in German and Japanese organizations (Teece et al., 1997, p. 529). Given that leading Saudi organizations, such as Saudi Aramco, were run initially by Americans as American companies, it is not hard to imagine the American influence prevailing. The disadvantage of 'radical' change or a 'strategic leap' strategy is that it is more challenging to manage (Teece, 2007, p. 1328) and requires a great deal of entrepreneurial leadership (Teece, 2014b, p. 336). While there is an emerging entrepreneurial movement in Saudi Arabia, there remains a shortage of entrepreneurial leaders in major organizations.

Saudi organizations confuse business process improvement for strategic change and reconfiguration of assets. Symptomatic of this is the dominance of the goal management model in Saudi organizations. The goal model is based on machine theory and relates to the efficiency of machines in transforming inputs into outputs in terms of time, effort and resources (Arsenault & Faerman, 2014; Ashraf & Abd Kadir, 2012; Martz, 2013). The

influence of the Saudi Government setting critical performance indicators (KPIs) and targets is contributing to the emphasis on outcomes while ignoring other constraints and complexities that influence long-term organizational survivability.

Saudi organizations are comfortable continuing to use the technology they are accustomed to, or technology that an exemplary Saudi company uses. Their top-down approach to managing change is characterised by minimal encouragement of employees to update their knowledge and to embrace experiential learning. The evidence also indicates that trust issues and communication barriers manifest as lack of support for the change initiatives of others. In addition, the management structure in Saudi organizations can encumber change initiatives by imposing responsibility for change on untrained managers who are more interested in achieving their operational performance targets.

Values and beliefs are a significant aspect of organizational culture in Saudi organizations, as elsewhere, and are instrumental in achieving successful change; but only if they genuinely represent the shared views of the population, and are effectively communicated to all stakeholders to galvanise positive actions towards common goals and objectives (Fainshmidt & Frazier, 2017). However, while Saudi organizations invest heavily in the preparation and presentation of their values and belief statements, they typically do a poor job of communication and ensuring compliance.

Demographics in Saudi Arabia are the primary reason that organizational culture in Saudi organizations is in a ‘state of flux’. The two major contributors are the high percentage of the population under thirty-five years of age, and the increasing inclusion of females in the Saudi workforce. The large number of Saudis under thirty-five is creating demand for job opportunities and generational tensions with existing management. The inclusion of females in the workforce is providing economic benefits at the individual, family and national levels, as well as providing Saudi organizations with access to a previously untapped pool of creative high performing employees. Young employees, particularly young graduates, are increasingly mobile in their careers and less likely to seek a ‘job for life’. They are increasingly comfortable working on short-term projects that offer rapid developmental opportunities, increased financial rewards, and enhanced promotional prospects.

Trust and respect within Saudi organizations did not score high in the survey and received negative responses from interviewees. Indicative of this is a preference for external consultants and underutilization of valuable internal knowledge. Personal relationships are

critical elements of trust in Saudi organizations and influence all aspects of decision-making. Survey responses gave no clear indication that the empowerment of employees was the norm in Saudi organizations. However, automation of decision and approval processes is pushing decision making downwards and eliminating unnecessary approval steps.

Targets set by the Saudi Government and personal fears of failure drive the performance culture central to Saudi organizations. Fear of potential failure is a major constraint on experiential learning. Saudis would prefer to learn from successes – *'Success has many fathers, but failure has none'*.

Saudi organizations have historically made substantial investments in traditional learning and development activities, and they associate organisational learning with their ability to manage change. However, they lack standardised routines necessary for identifying their future knowledge requirements, ignore available internal knowledge, and primarily rely on external sources for knowledge acquisition. There is inconclusive evidence supporting the notion that Saudi organizations conduct regular reviews of their existing assets and business processes.

Saudi organizations lack standardised routines for storing knowledge, making sense of it, and disseminating it to stakeholders. The silo structural nature of Saudi organizations is a barrier to the effective dissemination of knowledge and leads to lost opportunities. Saudi organizations are starting to adopt knowledge management technology that will aid in effective dissemination of knowledge across organizational barriers.

Saudi organizations typically do not support employee development beyond traditional job-skills training intended to provide them with the skills necessary to perform their roles. Except for the larger, more mature Saudi organizations, employees receive minimal support and encouragement for participating in the Continuing Professional Development (CPD) programs of professional associations.

The traditional conservative organizational culture in Saudi organizations is a constraint on students who have studied in reputable universities overseas from applying their innovative 'free-thinking' on their return to Saudi Arabia. The leadership of Saudi organizations is in a 'state of flux' with a 'new' generation of leaders taking charge, who are more receptive to innovative thinking.

Automation of production processes and the adoption of artificial intelligence in major Saudi industries are reducing the availability of jobs and redefining job types. New

types of jobs in new industries will challenge the Saudi definition of what is a worthy and respectable job.

Saudi organizations have established internal training schools and academies that deliver comprehensive training programs for trainees primarily intended for operational roles. These training schools and academies have historically proven very effective at producing 'job ready' employees. They have been a critical contributor to freeing Saudi organizations from reliance on an expatriate workforce. However, there remains a high dependence on external providers of non-operational type learning and development programs. Saudi organizations need to use objective and unbiased criterion when selecting external service providers.

There is a disconnect between the three major stakeholder groups – Industry, Academia, and Government – in producing the right number of 'job ready' graduates who are skilled in the disciplines demanded by 'industry'. Compared to North America, Europe and China, the Saudi educational system produces only a fraction of the number of graduates in the STEM (Science, Technology, Engineering, and Maths) disciplines. Saudi high school graduates prefer to undertake tertiary studies rather than vocational training. Consequently, Saudi Arabia relies heavily on an expatriate workforce of artisans and technicians.

Leadership in Saudi organizations is also in a 'state of flux' from which an inclusive and innovative leadership style is emerging that is willing to embrace and lead change. This phenomenon is characterised by a retirement bulge of 'Old-timer' Saudi executives and their replacements with less than five years' experience at that level. However, entrepreneurial leaders and leaders who encourage employees to seek and adopt new ideas are currently missing from Saudi organizations. As the leadership of Saudi organizations passes to the new generation of leaders, the challenge is to build *'wise heads on young shoulders'*. This will require a paradigm shift in how leaders are developed.

Chapter 7 Conclusions, contribution to theory and practice, limitations and future research

The objective of this chapter is to emphasise the significance of the research, the value of the research for management and organizational studies disciplines, and its potential contribution to management practices in the Saudi Arabian context. This chapter is not a summary 'report' *per se* of the study. The purpose of this chapter is to draw the reader's attention to the strength of the study's arguments confirming the initial assumptions and hypotheses regarding the relationships of pre-existing conditions (antecedents) to the building of DC. This approach has produced a compelling and interesting argument that Saudi organizations should adopt the conceptual framework described in this study as their preferred method for identifying and building the DC required to sustain continual change and growth.

The issue of how Saudi organizations identify what capabilities need building and how they build them became a constant thread in this research study. A key objective of this study was to understand the influence that antecedents (organizational learning, organizational culture, and leadership capabilities) have on building DC within a Saudi Arabian context.

In developing the conceptual framework, it became clear from the systematic literature review that a gap existed in the literature, in that there had been no previous empirical studies of the application of DC framework in a Saudi Arabian context.

The section on contribution to theory and practice will argue that this study is the first of its type in the Saudi Arabian context, and identifies additional constructs and associations that expand the generalisability of the DC framework. Furthermore, the Researcher argues that this study has potential implications at the macro, messo, and micro levels of Saudi society.

The section on limitations and future research will demonstrate that the method adopted was appropriate for the study, limitations of sample size and geographical context. Obtaining large numbers of Saudi participants for the study was always going to be a difficult challenge. However, the mixed-method approach of consolidating input from multiple sources, particularly critically purposive selected interviewees, has added a richness and depth of understanding that would not have been possible to achieve using single-purpose survey instruments.

The Researcher is proposing further research on the implementation issues associated with the adoption of the conceptual framework by Saudi organizations. A longitudinal study of Saudi organizations who have adopted the conceptual framework for building capabilities would provide useful data to analyse the framework's effectiveness in improving long-term survivability.

7.1 Key findings

This section provides a brief recap of the main findings and hypotheses.

The demographics situation in Saudi Arabia is a major trigger for change. More than sixty per cent of the population is under 35 years of age, are well qualified compared to their Grandfathers, and are all seeking a share of the Kingdom's wealth in terms of job opportunities and growth. High participation rates of females in tertiary programs has resulted in a large pool of underutilized creative and energetic talent.

However, there are potent constraints on this population-driven growth, including the lost dominance as 'safe' havens for investors that oil and gas companies have held in the past. According to the Institute for Energy Economics and Financial Analysis (IEEFA) (Hipple, 2020), oil and gas companies represented 28% of the value of the S&P stock index in 1980. In contrast, oil companies today account for less than 5% of the S&P stock index.

In addition, the Saudi domestic market is unable to support the demand for job creation and value growth. To grow, Saudi commercial organisations need to expand their range of products and services and focus on markets outside the Kingdom. However, expansion beyond Saudi Arabia is constrained by geopolitical instability in the region.

The research design, a mixed-methods approach, provided contextually rich information that a quantitative approach would not alone be capable of collecting. The interview transcripts provide a high-level narrative of how Saudi organizations identify potential new opportunities, threats and risks, make decisions on new opportunities, threats and risks, and how they manage change and reconfiguration of their asset portfolio. The findings confirm the complexity of the interrelationships between all of the components of the conceptual model. Table 7.1 - Comparison of Theory/Expectations with Findings (below) provides a brief summation of the qualitative data.

Dynamic capabilities components	Theory	Findings from Interviews
Organization Profile	Age, Size, & Maturity can lead to rigidity of processes	With some exceptions, this is true. There is a surge in entrepreneurialism among the new generation of Saudis – a game-changer?
Current Position	Do they think of assets in terms of VRIN (Valuable, Rare, Inimitable, or Non-Substitutable)	VRIN is new, but they were generally able to describe their assets in these terms.
Sensing	Do they have analytical systems & Individual Capacities to Learn & Sense, Filter, Shape and Calibrate Opportunities	Analytical systems are absent, and a reliance on external support to identify opportunities, threats and risks.
Seizing	What are their Enterprise Structures, Procedures, Design, Business Models, and Incentives for Seizing Opportunities	The primary focus of large organizations is to improve the performance of existing processes. Decision-making is slow and risk-averse.
Reconfiguration	What are their processes for Continuous Alignment and Realignment of Specific Tangible and Intangible Assets	Change is managed from 'Top-Down', not well defined The new generation of leaders is a 'game-changer'.

Table 7.1 - Comparison of Theory/Expectations with Findings

The quantitative data from the survey instrument was analysed using the SPSS software tool to confirm the strength and direction of correlations and the strength of causal relations between the independent variables (organizational learning, organizational culture, and leadership capabilities) and the dependent variables (sensing, seizing, and reconfiguration processes). From this analysis, it is reasonable to argue that in the Saudi Arabian context, each of the independent variables has a strong positive correlation to each of the dependent variables. The analysis also confirms that leadership capabilities, organizational learning, and organizational culture positively relate causally to the sensing, seizing, and reconfiguration capabilities of Saudi organizations. However, they do not conclusively confirm the positive mediating influence that the antecedents have on DC and the long-term survivability of Saudi organizations; this will require further study using a longitudinal approach over an extended period of say five (5) years. By examining each of the hypotheses

in Table 7.2 - Summation of Quantitative findings (below), it is possible to determine the conceptual framework's level of 'fit for use' in Saudi organizations.

Hypotheses	Quantitative findings
Leadership capabilities positively contribute to the dynamic capabilities of Saudi organisations	i. Strong agreement that leadership capabilities play a significant role in the capability of Saudi organizations to deal with change and long-term survivability. ii. Leaders typically do not encourage employees to look for, to discuss, and to report new opportunities, threats, and risks. iii. Strong agreement that leaders in Saudi organizations do not want their 'view of the world' challenged. iv. Minimum agreement that Saudi organizations have the capabilities to seize opportunities when they emerge. v. Very low agreement that entrepreneurialism is prevalent in leaders in Saudi organizations. vi. Managing change and the reconfiguration of assets are considered critical capabilities for Saudi organisations. vii. Recognition of need to continually align management methods, business models, and structures to the changing business environment. viii. Conclusive proof of the relationship between leadership, dynamic capabilities and long-term survivability of Saudi organizations will require further study using a longitudinal approach over an extended period of time, say five (5) years.
Organisational culture positively contributes to the dynamic capabilities of Saudi organisations	i. The majority of survey respondents agreed that organizational culture (values, beliefs, and trust) play a significant role in the capability of Saudi organizations to deal with change. ii. A minority of respondents agreed that there is a high level of trust throughout Saudi organizations. iii. The majority of Saudi organizations experience conflicts in strategic decision-making processes. iv. Saudi organizations typically lack a 'climate of trust' consequently, decision-making is a drawn-out process and decisions are made by distant managers and committees, resulting in a lack of ownership of decisions. v. A minority of survey respondents agreed that Saudi leaders typically trust their subordinates to make good decisions. vi. A minority of survey respondents agreed that employees have a high level of trust in their managers. vii. Empowerment of employees is typically missing from Saudi organisations. Only a minority of survey respondents agreed that Saudi leaders grant employees

		autonomy to do their work, and empower employees to take action without referring to their supervisor.
	viii.	A minority of survey respondents agreed that employees typically trust the competence of others, reciprocate faith, and trust in sharing knowledge.
	ix.	Survey respondents indicated that Saudi organisations typically lack a culture that encourages 'flexibility and experimentation'.
Organisational learning positively contributes to the dynamic capabilities of Saudi organisations	i.	Strong agreement on the importance of organizational learning to Saudi organizations' capabilities to deal with change,
	ii.	A minority of Saudi organizations gather information about opportunities, threats, and risks by well established and adhered to well-defined processes, and utilise well-developed analytical systems for this purpose.
	iii.	A minority of Saudi organisations are effective at 'letting go' of irrelevant knowledge, and transforming existing knowledge into new knowledge.
	iv.	Decision-making by a majority of Saudi organisations is constrained by past decisions.
	v.	The majority of Saudi organizations are not effective at knowledge absorption and lack the appropriate routines to assimilate new knowledge.
	vi.	A minority of Saudi organizations continually review and improve their operational processes.
	vii.	Saudi organizations typically measure the effectiveness of their organizational learning in terms of the investments they make in learning and development programs that focus on training and development of ordinary capabilities.

Table 7.2 - Summation of Quantitative findings

In conclusion, the discussion above has demonstrated that the conceptual framework is 'fit-for-purpose' in a Saudi Arabian context, and will prove useful to Saudi organizations wanting to identify what capabilities they need to build to suit the environmental dynamism in Saudi Arabia. However, the question remains whether environmental dynamism in Saudi Arabia is organic or disruptive, and how this will influence capability-building decisions. For example, the focus of discussions on DC has typically been on organizations, not the ecosystems in which they operate.

7.2 Contribution to theory and practice

This section describes this study's contribution to the theory and its implications to practice.

7.2.1 Contribution to theory

This study is the first empirical study of the application of the DC framework in a Saudi Arabian context. It has provided an opportunity to identify additional constructs and associations that expand the generalisability of the DC framework.

The study has added additional constructs and associations to the DC framework. The original DC framework consisted of three components, position, processes and paths (see Figure 7.1 - Addition of New Constructs to Original Dynamic Capabilities Framework). Position was defined in terms of the existence of a portfolio of tangible and intangible assets that were Valuable, Rare, Inimitable or non- Substitutable (VRIN). Processes were loosely defined as managerial and organizational in the original version of the DC framework. Subsequent versions of the framework redefined processes as clusters of processes that relate to sensing (identifying new opportunities, threats and risk), seizing (timely and appropriate decision-making), and reconfiguration (the acquisition, deployment and divestment of assets).

This study has provided a unique contribution to theory and practice by demonstrating

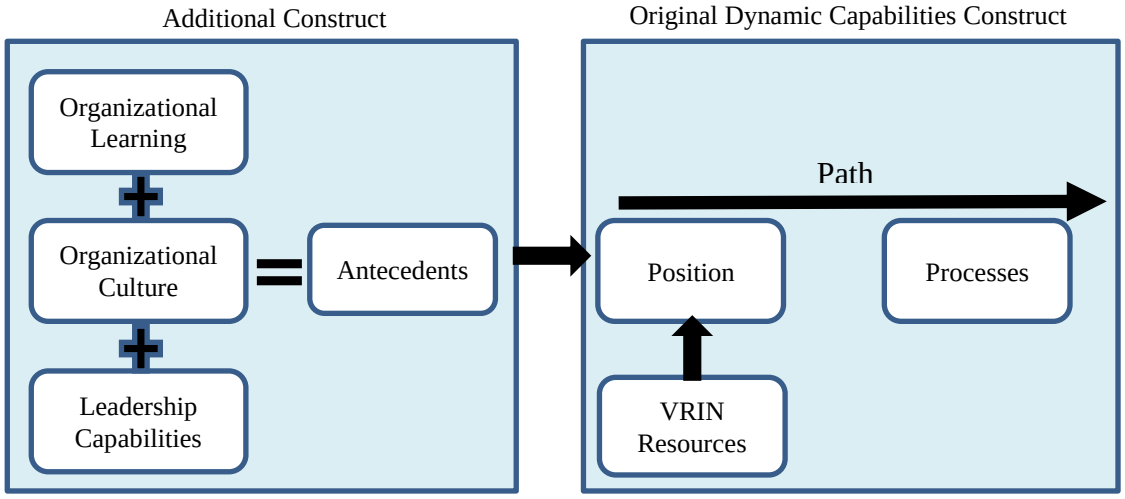

Figure 7.1 - Addition of New Constructs to Original Dynamic Capabilities Framework

an extended version of Teece's DC framework. Previous studies have recognised the critical role that organisational learning, organisational culture, and leadership capabilities individually have as DC, and some studies have explored their association individually as antecedents of DC. However, this study provides a new construct (see Figure 7.1 - Addition of New Constructs to Original Dynamic Capabilities Framework) that associates the

collective influence that the antecedent processes of organisational learning, organisational culture, and leadership capabilities have on the identification and development of DC. The original version of the DC framework assumed that an organization's portfolio of tangible and intangible assets (its position) would include characteristics of organizational learning, organizational culture, and leadership capabilities. This extension makes no such assumption and focuses on the interactions between the antecedents that lead to more effective identification and building of DC.

The unique characteristics of Saudi Arabia have provided an opportunity to test the boundary conditions of the DC framework. Previous studies have addressed the DC framework in the context of 'free market' environments where the value of the DC framework is in assisting organisations to build competitive advantage. This study confirms the suitability of the DC framework in economic ecosystems that are controlled mainly by a central government while experiencing high rates of environmental dynamism.

7.2.2 Implications to practice

The analysis of the research data and subsequent findings of this study have significant implications that will prove beneficial to Saudi Arabia at the macro, messo, and micro levels as it progresses through the current environmental dynamism.

At the macro-level, the Saudi Government should:

1. Expand market opportunities for Saudi organisations by encouraging political stability in the region (6.2.2 Sensing Capabilities page 77).
2. Develop strategies for government agencies, industry and academia to collaborate on improving the conduit of 'job-ready' vocational and professional Saudi talent (6.2.6 Organizational learning page 100).
3. Encourage a paradigm shift from targets that reflect short-term performance to targets that challenge the achievement of long-term survivability (6.2.3 Seizing Capabilities page 81).
4. Encourage a culture of acceptance of innovation (6.2.2 Sensing Capabilities page 80).
5. Encourage the employment of females in non-traditional female roles (6.2.5 Organizational culture page 92).
6. Encourage the Saudi sovereign Public Investment Fund (PIF) to adopt a 'venture capital' approach to investing in Saudi entrepreneurial ventures (6.2.1 Position on page 74).

At the messo-level, Saudi organisations should:

1. Strive to eliminate ‘embedded’ management practices and technologies that have exceeded their ‘value-adding’ usefulness (6.2.3 Seizing Capabilities on page 82).
2. Adopt decision-making practices that are ‘fact-based’, timely and inclusive of knowledge from internal sources (6.2.3 Seizing Capabilities on page 83).
3. Continually review and revise their business models, strategic plans, and organisational structures to accommodate environmental dynamism (6.2.3 Seizing Capabilities on page 82).
4. Encourage a culture of acceptance of innovation rather than simply improving existing business processes (6.2.4 Reconfiguration Capabilities on page 86).
5. Encourage the empowerment of employees in recognising improvement opportunities and for managing change (6.2.5 Organizational culture on page 91).
6. Encourage learning and development departments to develop entrepreneurial leaders who encourage employees to seek and adopt new ideas (6.2.6 Organizational learning on page 98).
7. Encourage employees to update their knowledge beyond what is required for them to do their current job, and to embrace experiential learning (6.2.5 Organizational culture on page 92).
8. Encourage employees to participate in professional or vocational associations actively (6.2.6 Organizational learning on page 98).
9. Learn to fully utilise the internal body of knowledge before engaging external consultants for knowledge acquisition (6.2.6 Organizational learning on page 94).
10. Adopt knowledge management technology that will aid in effective dissemination of knowledge across organisational barriers (6.2.6 Organizational learning on page 97).

At the micro-level, Saudi individuals should:

1. Develop the skills necessary to make themselves competitive in a job market where job availability in traditional Saudi employers is declining, and job types are changing (6.2.6 Organizational learning on page 99).
2. Improve their acceptance of greater female participation in the workforce (6.2.5 Organizational culture on page 92).
3. Take the initiative to engage in development programs beyond what is provided by their employer (6.2.6 Organizational learning on page 97).

4. Support fellow employees by sharing knowledge and learning experiences (6.2.6 Organizational learning on page 95).

7.3 Limitations of the research and suggestions for future research

This study takes a critical multi-disciplinary approach in examining the collective effect that learning, leadership, and culture have on DC, albeit in a limited geographical context.

This study would be a useful frame for further research on the interrelations between the antecedents (organizational learning, organizational culture, and leadership capabilities) and the dependent DC. These antecedents do more than just complement each other; they are integral in each other to the extent they merge as one. Kay et al. (2018, p. 634) propose a further study on the dominant influence antecedents have on DC. Further study would be useful on whether Saudi organizations bundle their organizational culture, organizational learning, and leadership programs rather than running them individually.

The Saudi Arabian context adds uniqueness to the study. Saudi Arabia is transitioning its economy from almost complete reliance on its stable and mature extraction industries (oil and gas, petrochemicals, and minerals) to vibrant juvenile industries that may be short-lived but have growth and value-adding potential. The central government's firm control of the ecosystems in which Saudi organizations operate is increasing its complexity.

The cross-sectional extent of the study limits its ability to connect the influence of the antecedents with DC and the long-term survivability of Saudi organizations. To this end, a longitudinal study over five (5) or more years is proposed. This would demonstrate the positive impact of the framework in practice. Many authors have attempted to measure the value that DC have on organizational performance. Teece (2016, p. 203) points to some interesting data that indicates less than ten (10) per cent of public firms (North America) with revenue exceeding $100 million remain in the top quartile of profitability for six to ten years. This could be a useful basis for further studies of Saudi organizations in understanding how many of the new start-ups last the distance.

The research objectives originally included exploring implementation issues with the adoption of the conceptual framework by companies within Saudi Arabia. In consultation with the Supervisory Team, the Researcher has agreed that this research objective is beyond the scope of this professional doctorate. The Researcher has expressed a keen interest in conducting this research as a separate project. The project would start with a presentation of the results of this study at a series of workshops primarily to participants of this study and other interested parties. Identify opportunities for working closely with a selection of critical purposive selected organizations for further investigation and moving forward with the framework.

Chapter 8 Author's professional development

1. Introduction

This chapter represents a critical discussion of the Researcher's professional development since starting on the professional doctorate journey.

Refection and how I reflect has had a significant positive impact on my professional and academic development and practices. I reviewed articles about reflection and I reflected on how I reflect (reflexivity) (Boud, 2001; Eaton, 2016; Finlay, 2002, 2008; Rich, 2015; Tsingos-Lucas, Bosnic-Anticevich, Schneider, & Smith, 2017). I explored the dominant theories of reflective practice Kolb (1984), Gibbs (1988), and Schön (1983) in terms of their influence on my learning and development.

2. Assessment of strengths and weaknesses at start of DBA

There is a substantial gap between the knowledge I had at the start of my career and what I have now. As I mature, I'm realising that the more knowledge I acquire, the more I realize that I need to understand more (Finlay, 2002; Tsingos-Lucas et al., 2017).

As expected, being a practitioner with decades of experience, the SWOT analysis process caused me a great deal of pain and agony (Anderson & Gold, 2015). However, it did cause me to reflect on who I was, and how I should utilize the findings. No doubt, I confirmed the assumptions of Schön (1983) that competent practitioners usually know more than they can say, and find these assessments essential to become aware of their implicit knowledge base and learn from their experience. In the next section, I provide a precis of my reflections on my professional development since year one of the DBA program.

3. Professional and academic development

i. Developed a deep understanding of the dynamic capabilities framework

At the start of the DBA journey, the DC framework was a new concept to me. On reflection, I understood the component parts of the framework, but could not articulate the 'big picture'. I have since been able to establish a comprehensive understanding of the DC framework and I am now confident of, and I have demonstrated my ability to engage in robust discussions on the topic with any audience at any level.

I have established an extensive library in Mendeley of over eight hundred articles that relate to the DC topic or some other aspect of this project such as research methods, data collection, and data analysis techniques. Mendeley has provided invaluable assistance in reviewing articles, comparing different arguments, and categorising articles. Initially I populated my library with articles identified in the systematic literature review, but Mendeley also provides an 'alert' service, whereby it sends emails with details of recent articles that relate to the subject matter. This service is beneficial in that it provides a 'heads-up' of any new research activities in the subject area. For example, the 'alert' service identified several new articles published by the seminal authors.

Now that I am approaching the end of the DBA journey, I feel confident in my ability to analyse the research of others in the subject area and argue contrary positions. I acknowledge that knowledge acquisition, and knowledge integration are ongoing processes, and will continue until I 'fall off my perch'.

ii. Research methods & methodology

At the beginning of the DBA journey, I had little knowledge of key concepts such as ontology, subjectivism, and epistemology. Nor was I a statistician, so such techniques as Confirmatory Factor Analysis, Exploratory Factor Analysis, t-tests, correlations, and regression analysis was foreign to me. I found the Saunders 'Onion' a useful aid in learning these topics.

It is the rigor imposed by the research methods and methodology adopted by the study that adds value to the thesis and its outcomes, and it is this rigor that differentiates this thesis from the many other business reports, studies and proposals that I have completed throughout my career.

Determining the ontological (what is real) nature of DC within Saudi organizations, was at the crux of this study. As a 'late career' Researcher and long-time practitioner in Saudi organizations, I knew that my research had to be a collaborative effort between Researcher and participants. It was necessary to gain ownership and acceptance of the solutions by Practitioners in Saudi organizations for it to make a difference.

My prior experience working in Saudi Arabia together with my knowledge of their culture, and understanding of the 'social' characteristic of how their organizations operate, led me to choose a subjectivist philosophy.

The literature review indicated that mixed-methods was used in the majority of empirical studies of DC. In this case, I conducted semi-structured interviews and an on-line survey. The process of constructing interview scripts and survey questionnaire increased my knowledge of how to create reliable instruments. I relied heavily on the instruments used in previous studies. I had to learn how to conduct a thematic analysis of the qualitative data using the NVivo product. Fortunately, we covered this aspect in the first (taught) year of the DBA. I found the NVivo thematic analysis process very interesting, in fact, more interesting than originally thought. Probably because the process advanced an enriched understanding of the Saudi Arabian context that would have been lost if the study relied entirely on quantitative data. NVivo also comes with a number of useful and easy to follow on-line tutorials that provide a 'roadmap'. Not being a statistician, I found the quantitative analysis very difficult. I started to use SPSS 25 without any plan. My supervisors provided advice and guidance, and suggested that I use Julie Pallant's SPSS Survival Manual as a guide. I also accessed the Graduate School Development Program tutorial at UoP. For example, the presentation by Dr. Andy Williams (UoP) on Introduction to Factor Analysis. The National Centre for Research Methods (NCRM) also provides many on-line tutorials for example, the video lesson on confirmatory factor analysis by Professor Patrick Sturgis.

iii. Impact of the DBA on Professional Practice

The academic aspect of this developmental need involved negotiating the scope, aims and objectives of the study with UoP faculty, and gaining agreement with the supervisory team on project deliverables and methodology.

The challenge with conducting research in Saudi organizations is gaining the trust of participants and their confidence that you will preserve the confidentiality of their identity and contribution. Senior leaders in Saudi organizations focus mainly on the efficiency of their current processes. This is how their performance is measured, how their bonuses are awarded, and promotions granted. To get them to adopt a paradigm shift is not an easy task. One participant likened it to "asking them to change religion". Thankfully, I was able to convince a selection of critical senior executives to participate. Time was spent explaining the DC framework to participants because the concept was new to them. It was anticipated that forty minutes would be the maximum amount of time for each interview, however, once the discussion started; most interviews took sixty to ninety minutes duration. Participants remarked that the process caused

them to reflect on how they identify and build capabilities, and indicated a willingness to participant in further research and the implementation of the conceptual framework.

iv. Networking in both academic & professional spheres

I have always had professional networks throughout my career and been active in continuing professional development programs. For example, I have been a Member of the Australian Computer Society (Senior), and a Member of the Australian Institute of Project Management for decades. In addition, I became a Member of the Chartered Quality Institute (UK) after completing my MSc. SQM at UoP in 2011. I was Director-at-Large of the Arabian Society for Human Resource Management from 2008 thru 2012. During this time, we established branches throughout the 'Gulf" Region, in Kuwait, Oman, and Abu Dhabi. I was program director and Vice-Chairman of two successful conferences, ASHRM2010 (Bahrain) and ASHRM2012 (Abu Dhabi).

I have expanded my academic network through attendance at key academic conferences including ANZAM2017 (Melbourne), UFHRD2018 (Newcastle), ANZAM2018 (Auckland), and BAM2019 (Birmingham). I have deliberately sought out aspirational academics like Jeff Gold, and Mark Saunders at these conferences. In addition, I have communicated via email with David J. Teece the seminal author of the DC framework.

v. Develop academic & professional presentation skills

A key challenge for me was learning how to write and speak academically. Thankfully, the assignments we completed during the first year of the DBA aided in the development of my writing style, language, and grammar critical for expression in an academic world. Each of the following assignments included both a written and oral presentation component: Publication and Dissemination, Literature Review, Research Strategy and Research Design, Research Proposal and Professional Development. During the taught year, UoP faculty members gave their at times brutal, but honest critique on written assignments and what needed improving. We also gained experience 'selling' our ideas to our peers in the DBA cohort. The Academic Skills (ASK) unit at UoP also helped me.

I have made three presentations of my progress to the UoP annual review panels in 2017, 2018, and 2019. In addition, I also presented an overview of my project to the DBA conferences in 2017 and 2018.

I have presented my project at the ANZAM 2017, ANZAM 2018, and UFHRD2018 conferences, and I presented a 'full' paper at BAM2019.

The experience in presenting my ideas coupled with my increased level of knowledge in the subject area has made me more confident at delivering the right 'elevator' message to the right audience.

vi. Channels of influence and support during DBA

As expected, my fellow cohort members and peers, have been valuable in assisting me to make sense of much of the material and the processes I have encountered (Anderson & Gold, 2015; Fulton, Kuit, Sanders, & Smith, 2013). I hope to maintain these relationships and benefit from the value of their peer reviews, and continue to use them as a sounding board, as they do me.

I cannot over emphasise the contribution that I have received from my Mentors, and Tutors throughout year one and my supervisory team since then. I met regularly with my supervisory team, and they provided invaluable support and guidance throughout the entire journey.

4. Conclusions

I set out to describe in this chapter my professional development, and the impact that the DBA program has had on my learning and development.

I have shown that from a baseline of knowledge and learning style at the start of the DBA program, I have acquired new knowledge and developed new learning capabilities through reading more extensively, writing more critically, adopting the critique of my peers, Mentors, and Tutors, and consciously applying the principles of reflection in action and reflective actions. I no longer rely on tacit knowledge, but now consciously reflect on my experiences and feelings.

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Appendices

Appendix 1 - The Systematic Literature Review (SLR) Process

Appendix 1 Table of Contents

Initial Search

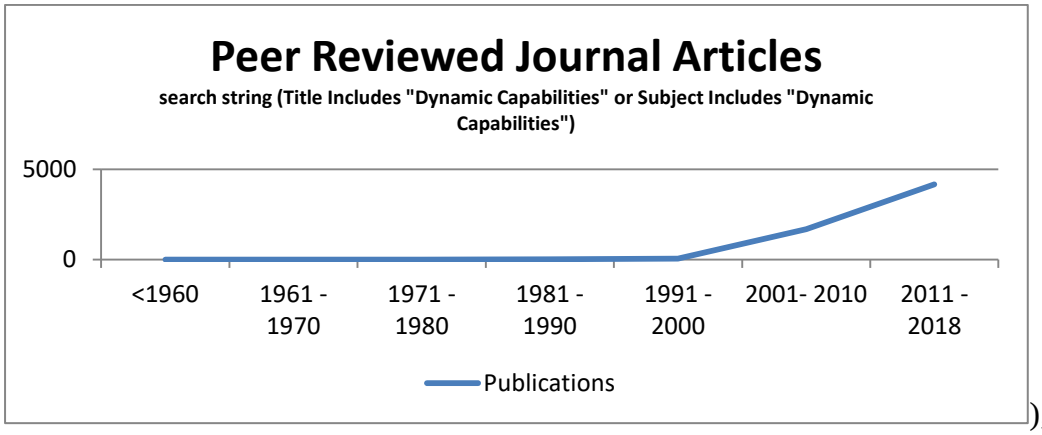
Each article in the literature review was considered against five criteria: (1) definitions, and terminology; (2) theories, models and frameworks; (3) measurements and assessment methods; (4) evolution and contextual applications; and, (5) relevance to dynamic capabilities in a strategy context. A significant challenge was identifying recent articles that satisfied all five-evaluation criteria, and were published within the last five years (since 2011).

One often encounters the argument that a literature review should focus on more recent additions to the body of knowledge however a counter argument (Baruch & Ramalho, 2006; Sparrow & Cooper, 2014) is that many of the debates and concerns being expressed today echo the past, and discussions today don't need to assume an absence of previous research and could be better informed, and better contextualized, by drawing upon frameworks that have been developed, scrutinized and discussed previously.

There was a clear bias towards articles, from seminal authors, that discussed original foundational definitions, theories, or models and were cited a significant number of times in subsequent and more recent articles.

A superficial search of the University of Portsmouth catalogue shows that publications of books relating to dynamic capabilities have trended upwards (see Figure 8.1

Appendix 1. - The Systematic Literature Review (SLR) Process



); and, an initial search of the University of Portsmouth library using the search string (Title Includes "Dynamic capabilities" or Subject Includes "Dynamic Capabilities") revealed a total of 5,885 peer reviewed articles published in academic journals, in English language.

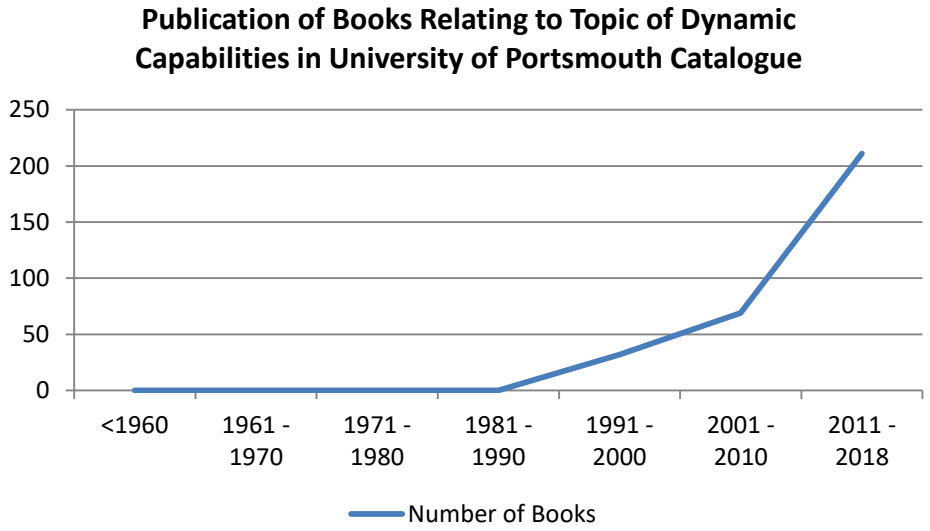


Figure 8.1 Search results for books in UoP Catalogue

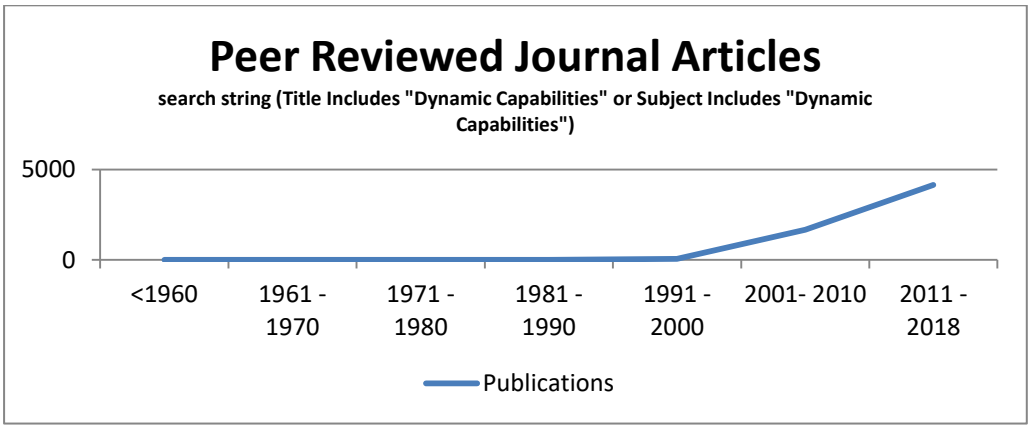


Figure 8.2 Search results for peer reviewed articles in academic journals

Appendix 1. - The Systematic Literature Review (SLR) Process

When grouped into decades based on their publication date (See **Error! Reference ource not found.**), it is easy to see that interest in dynamic capabilities is increasing not reducing.

But as suggested by Pisano (2017), the literature on "dynamic capabilities" has primarily focused on debating definitions rather than empirical studies of how organizations identify and select capabilities essential for their long term survivability.

At this stage, the primary aim was to seek articles that would help provide an explanation of the foundational theory, any models plus any empirical studies where the theories have been practiced.

Initial Search Results

Search String	Data-Bases	Limiters Fields Searched	Hits
"Dynamic capabilities"	UoP Catalogue	Title	312
"Dynamic capabilities"	UoP Library EBSCO	Title All sources Language English	35,436
Title includes "dynamic capabilities" OR Subject includes "dynamic capabilities"	UoP Library EBSCO	Peer Reviewed Academic Journals Language English	5,885
Title includes "dynamic capabilities" OR Subject includes "dynamic capabilities"	UoP Library EBSCO	Peer Reviewed Academic Journals Language English 2012 - 2018	3,895
(Title Includes "dynamic capabilities" or Subject Includes "dynamic capabilities") AND ((Title Includes "determinants" OR "antecedents") OR (Subject Includes "determinants" OR "antecedents"))	UoP Library EBSCO	Peer Reviewed Academic Journals Language English 2012 - 2018	580
(TX includes "dynamic capabilities" AND (TX includes "scanning capabilities" OR "sensing capabilities" OR "seizing capabilities" OR "reconfiguration capabilities")	UoP Library EBSCO	Peer Reviewed Academic Journals Language English 2012 - 2018	263
(Title includes "dynamic capabilities" OR Subject includes "dynamic capabilities") AND ((Title Includes "determinants" OR "antecedents") OR (Subject Includes "determinants" OR "antecedents")) AND (TX includes "institutional theory")	UoP Library EBSCO	Peer Reviewed Academic Journals Language English 2012 - 2018	18

(Title includes "dynamic capabilities" OR Subject includes "dynamic capabilities") AND (TX includes "Saudi Arabia")	UoP Library EBSCO	Peer Reviewed Academic Journals Language English 2012 - 2018	3

Pilot Study

I was keen to stand on the shoulders of others who had gone down the same path, so I sought out previous literature reviews that specifically addressed dynamic capabilities, and determinants or antecedents of dynamic capabilities. This gave me an insight into the most prolific authors and researchers whose work had been referenced the most, which I then applied to the Google Scholar search tool to do a forward citation search for articles published since 2012 that cited the earlier work. I now had the original work and could identify any evolution in the theories and models. For example, using the seminal work done by Teece, Pisano, and Shuen (1997) *"Dynamic Capabilities and Strategic Management"* as a base search using Google Scholar (as at 5:30AM GMT 20-Feb-2018) this article had been cited in 30,789 articles. This is a significant increase in the figure (1829) quoted by Peteraf, Di Stefano, and Verona (2013). Using the same technique for Eisenhardt and Martin (2000) "Dynamic Capabilities: What are they?", this article had been cited in 13,767 articles (according to Google Scholar as at 5:45AM GMT 20-Feb-2018). This figure also represents a significant increase over the figure (671) quoted by Peteraf, Di Stefano, & Verona (2013). These figures support the view presented by Pisano (2017) that there has been a plethora of literature on the topic that has been published in recent times.

Pilot Study Results

Search String	Data-Bases	Limiters Fields Searched	Hits
(Title includes "Dynamic capabilities" OR Subject includes "dynamic capabilities") AND (SU includes "Literature Review")	UoP Library EBSCO	Peer Reviewed Academic Journals Language English 2012 - 2018	28

Literature Categorisation

Inclusion List – VIPs (Very Important Papers)
Articles with dynamic capabilities as the main theme or subject
Articles with dynamic capabilities and determinants or antecedents as the main theme or subject

Appendix 1. - The Systematic Literature Review (SLR) Process

Literature reviews with dynamic capabilities as main theme or subject
Articles from ViP list written by profound and credible authors from recognized institutions/backgrounds

Inclusion List –Important Papers
Articles describing empirical studies of operationalizing theories and models from ViP list.
Articles providing a recent perspective on the foundational theories and models.
Recent articles published since 2012 that cited earlier foundational work.

Exclusion List –Papers Not Meeting Inclusion Criteria
I avoided including practitioner based articles, although in some cases they provided insights into the application of theories but in most cases they didn't provide a theoretical background to their arguments
I avoided using articles that focused on a single determinant, such as leadership, or organizational culture; I was looking for a more holistic discussion on how organizations seek out and make selection decisions about what and how they acquire dynamic capabilities.

In all I now have over 800 articles of which some 70 articles relate directly to dynamic capabilities, downloaded into my Mendeley library. This library is proving very useful when I need to find articles that refer to specific areas that I'm addressing, but the number also has disadvantages and requires constant vetting to ensure that only articles from quality sources are included.

The Academic Journal Guide 2015 published by the Chartered Association of Business Schools validated the quality of each article referenced in this essay.

Conclusions

This systematic literature review has highlighted gaps in empirical research on how organizations go about identifying and selecting which capabilities they need in order to sustain growth during periods while significant change is occurring in their business environment. While the literature includes a plethora of research and discussions on definitions of dynamic capabilities, there is limited empirical research on the determinants or

antecedents of the dynamic capability processes: sensing; seizing; and, reconfiguration. Much of the discussion on determinants and antecedents, relate to the effect that dynamic capabilities have on organizational performance rather than on what organizations perceive as prerequisites to making successful choices and decisions on what dynamic capabilities the organization should pursue and the pathways towards acquiring them.

However, a search using "sensing capabilities", "scanning capabilities", "seizing capabilities", or "reconfiguration capabilities" as search parameters did give some useful hits, although again, the majority of these articles did not actually discuss the antecedents of the SSR processes, but the capabilities required within the SSR processes.

This review has also identified a gap in the literature covering the application of dynamic capabilities within a Saudi Arabian context. There is only an oblique reference to Saudi Arabia in the discussion by Shuen, Feiler, anf Teece (2014) on relevance of the dynamic capabilities concept to the oil and gas industry and the International Energy Agency's prediction that production in the United States of America is expected to exceed that of Saudi Arabia by 2017 – 2020. David J. Teece was approached directly (see 0 **Appendix 7 - Email from David Teece** (below) regarding any dynamic capability studies in a Saudi Arabia. His response was negative – that is, no studies of dynamic capabilities in Saudi Arabia to his knowledge.

Appendix 2 - Semi-Structured Interview Script

Consent

If you are willing to participate in this research project, you will be asked at the start of the interview to confirm orally that you have been adequately informed of the project's aims and objectives, that you consent to participate in the project, and that your participation is on a voluntary basis as an individual, not as the representative of any organization.

Profile questions – in thinking of the organization that you have the most experience:

1. What is the age of that organization?					
<=10 Years		>10<=25 years		>25 years	
2. **What is the size of that organization - #employees?**					
<=1000		>1,000 <=10,000		>10,000	
3. **What is an estimate of that organization's annual revenue?**					
<=$100million		>$100million<=$1billion		>$1billion	
4. **In what industry sector did that organization operate?**					
Manufacturing		Mining		Oil & Gas	
Services				Other	
5. **What was your job level in that organization?**					
Executive		Manager Mid-level		Supervisor Team leader	
Manager High level		Manger Low level		Employee	
6. **How long did you work at that level?**					
<=5years		>5years<=10years		>10years	

7a. In thinking about your experiences with Saudi organizations, and their CURRENT performance goals, please rate the importance of the following items.	Low importance 1 2 3 4 5 High importance
Profitability	1 2 3 4 5
Market share	1 2 3 4 5
Product range	1 2 3 4 5
Customer satisfaction	1 2 3 4 5
Shareholder value	1 2 3 4 5
Job Creation	1 2 3 4 5
Other (please specify)	1 2 3 4 5

7b. In thinking about Saudi organizations in say 15 – 20 years time, and their FUTURE performance goals, please rate what you think will be the importance of the following items.	Low importance High importance

Appendix 2. - Semi-Structured Interview Script

Profitability	1 2 3 4 5
Market share	1 2 3 4 5
Product range	1 2 3 4 5
Customer satisfaction	1 2 3 4 5
Shareholder value	1 2 3 4 5
Job creation	1 2 3 4 5
Other (please specify)	1 2 3 4 5

Participants questions (In your opinion and based on your experience)

Q1. What capabilities (tangible and intangible assets) do you perceive would set a Saudi organization apart from others? And why?

Q2. In your opinion, what capabilities (tangible and intangible assets) should Saudi organizations focus on building in the future?

Q3. What is your view of how Saudi organizations currently detect new opportunities, threats, and risks?

Q4. In your opinion, what should Saudi organizations do differently to detect new opportunities, threats, and risks?

Q5. What are your perceptions of how Saudi organizations currently make decisions regarding new opportunities, threats, and risks?

Q6. In your opinion, what changes should Saudi organizations make to their decision-making processes on dealing with new opportunities, threats, and risks?

Q7. What is your perception of how Saudi organizations currently manage change and reconfiguration of their assets?

Q8. In your opinion, what changes should Saudi organizations make to their change management and asset reconfiguration processes?

Q9. What is your perception of how well developed employees' abilities are to learn new things and sense new opportunities, threats, and risk? Do you feel that Saudi organizations should develop these abilities further?

Q10. What are your perceptions of how the culture of a Saudi organization contributes or constrains an organization's capabilities to change and transform? In your opinion, what should Saudi organizations do to improve on these?

Q11. What are your perceptions on how leadership aids or constrains an organization's capabilities to change and transform? In your opinion, how would you improve on these?

Appendix 2. - Semi-Structured Interview Script

Q12. What is your perception of the level of influence positions such as yours plays in achieving strategic change and balance in an organization's portfolio of capabilities (tangible and intangible assets)? In your opinion, what would you like to do to increase the level of influence of positions such as yours?

Q13: Do you have any other comments in relation to developing dynamic capabilities for Saudi organization?

Thank you for participating in this research project.

Please indicate by checking this box ☐ if you would like to receive a copy of the aggregated report of the research findings.

Appendix 3 - Survey Questionnaire

SURVEY QUESTIONNAIRE

Consent

If you are willing to participate in this research project, please tick the check box here ☐ to indicate that you have been adequately informed of the research project's aims and objective, that you consent to participate in the project, and that your participation is on a voluntary basis as an individual, not as the representative of any organization.

Section A. - Profile questions – in thinking of the organization that you have the most experience:

1. What is the age of that organization?					
<=10 Years		>10<=25 years		>25 years	
2. **What is the size of that organization - #employees?**					
<=1000		>1,000 <=10,000		>10,000	
3. **What is an estimate of that organization's annual revenue?**					
<=$100million		>$100million<= $1billion		>$1billion	
4. **In what industry sector does that organization operate?**					
Manufacturing		Mining		Oil & Gas	
Services				Other	
5. **What was your job level in that organization?**					
Executive		Manager Mid-level		Supervisor Team leader	
Manager High level		Manger Low level		Employee	
6. **How long did you work at that level?**					
<=5years		>5years<=10years		>10years	

7a. In thinking about your experiences with Saudi organizations, and their CURRENT performance goals, please rate the importance of the following items.	Low importance				High importance
Profitability	1	2	3	4	5
Market share	1	2	3	4	5
Product range	1	2	3	4	5
Customer satisfaction	1	2	3	4	5
Shareholder value	1	2	3	4	5
Job creation	1	2	3	4	5
Other (please specify)	1	2	3	4	5

Appendix 3. - Survey Questionnaire

7b. In thinking about Saudi organizations in say 15 – 20 years' time, and their FUTURE performance goals, please rate what you think will be the importance of the following items.	Low importance				High importance
Profitability	1	2	3	4	5
Market share	1	2	3	4	5
Product range	1	2	3	4	5
Customer satisfaction	1	2	3	4	5
Shareholder value	1	2	3	4	5
Job creation	1	2	3	4	5
Other (please specify)	1	2	3	4	5

8. **In thinking of your experiences with Saudi organizations generally, what, in your opinion, are the best measures for comparing an organization against its competitors?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree				Strongly Agree
Higher profitability than competitors	1	2	3	4	5
Higher sales revenue growth rate than competitors	1	2	3	4	5
Larger market share than competitors	1	2	3	4	5
Better product range & quality than competitors	1	2	3	4	5
Speed and agility at meeting changing customer needs.	1	2	3	4	5
Lower operating cost than competitors	1	2	3	4	5
More adaptable to new ideas than competitors	1	2	3	4	5
Other (please specify)	1	2	3	4	5

Section B. – dynamic nature of business environment questions

9. **In thinking of your experiences with Saudi Arabia, in your opinion, how dynamic is change in your industry?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree				Strongly Agree
Products or services update quickly	1	2	3	4	5
The technology in our industry changes rapidly	1	2	3	4	5
It is difficult to predict changes in technology in our industry	1	2	3	4	5
Technology is our industry is very stable	1	2	3	4	5
It is difficult to predict changing customer needs	1	2	3	4	5
Our customers' needs rarely change	1	2	3	4	5
Other (please specify)	1	2	3	4	5

Appendix 3. - Survey Questionnaire

Section C. – Sensing capability questions

10. **In thinking of your experiences with Saudi organizations, in your opinion, what level of priority do Saudi organizations put on capabilities for sensing new opportunities, threats, and risks, and how do they do it?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree 1 2 3 4 5 Strongly Agree
Sensing new opportunities, threats and risk is a key capability for long term survivability	1 2 3 4 5
Organizations gather information about opportunities, threats, and risks by:	
• Well established and followed processes.	1 2 3 4 5
• Encouraging employees to look for, to discuss, and to report new opportunities, threats, and risks	1 2 3 4 5
• Encouraging employees to acquire and utilize new knowledge	1 2 3 4 5
• Well-developed analytical systems	1 2 3 4 5
• Connections to universities, research organizations, and professional associations	1 2 3 4 5
• Connections with industry affiliates.	1 2 3 4 5
Organizations prefer to rely on familiar technologies rather than adopt new technologies	1 2 3 4 5
Organizations prefer to adopt technologies that are well established in their industry	1 2 3 4 5
Organizations can easily predict the impact of changes to their internal and external environments	1 2 3 4 5
Other (please specify)	1 2 3 4 5

Appendix 3. - Survey Questionnaire

Section D. – Seizing capability questions

11. **In thinking of your experiences with Saudi organizations generally, how, in your opinion, do organizations make decisions about new opportunities, threats, and risks?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree				Strongly Agree
Seizing is a key capability to ensure prompt and appropriate action to realise opportunities and to counter threats and risks.	1	2	3	4	5
Organizations are able to					
a) Seize most business opportunities when they emerge.	1	2	3	4	5
b) Catch many new opportunities available in the market.	1	2	3	4	5
c) Capture new R&D opportunities whenever they appear.	1	2	3	4	5
d) Grab new product development opportunities resulting from changes in technologies.	1	2	3	4	5
Organizations quickly deal with conflicts in the strategic decision-making process.	1	2	3	4	5
Organizations make timely decisions to deal with strategic problems.	1	2	3	4	5
Organizations are not constrained by past decisions in making new strategic decisions	1	2	3	4	5
Others (please specify)	1	2	3	4	5

Section E. – Reconfiguration capability questions

12. **In thinking of your experiences with Saudi organizations generally, how, in your opinion, do organizations manage change, and the reconfiguration of their assets (tangible and intangible)?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree				Strongly Agree
Managing change and the reconfiguration of assets is a key organizational capability.	1	2	3	4	5
Organizations constantly align their management methods, business models, and structures to the changing business environment	1	2	3	4	5
Organizations encourage all sections of the organization to support each other's change initiatives.	1	2	3	4	5
Organizations encourage employees to look for, and implement incremental changes to existing practices, products, and asset operations.	1	2	3	4	5
Organizations encourage their employees to replace outdated knowledge.	1	2	3	4	5
Organizations encourage their managers and supervisors to support their employees if they want to try new ways of doing things.	1	2	3	4	5

Others (please specify)	1 2 3 4 5

Section F. – Organizational culture questions

13. **In thinking of your experiences with Saudi organizations generally, what are your perceptions of the typical organizational culture?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree — Strongly Agree
Organizational culture (values, beliefs, and trust) play a significant role in the capability of Saudi organizations to deal with change.	1 2 3 4 5
There is a high level of trust throughout Saudi organizations	1 2 3 4 5
Employees have a high level of trust in their managers	1 2 3 4 5
People are held accountable for their promises.	1 2 3 4 5
Managers typically trust their subordinates to make good decisions	1 2 3 4 5
Managers typically allow subordinates autonomy to do their work	1 2 3 4 5
Employees are typically able to self-manage their time and tasks	1 2 3 4 5
Employees can typically take action on their tasks without referring to their supervisor	1 2 3 4 5
Employees trust the competence of others and reciprocate faith and trust	1 2 3 4 5
Others (please specify)	1 2 3 4 5

Section G. – Managerial capabilities questions

14. **In thinking of your experiences with Saudi organizations generally, what are your perceptions of their CURRENT managerial capabilities?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree — Strongly Agree
Managerial capabilities play a significant role in the capability of Saudi organizations to deal with change.	1 2 3 4 5
Employees are encouraged to problem solve	1 2 3 4 5
Employees are encouraged to “think outside of the box”	1 2 3 4 5
Employees’ original ideas are highly valued	1 2 3 4 5
Managers do not want their “view of the world” to be questioned	1 2 3 4 5
Managers ensure that the work of all employees is coordinated	1 2 3 4 5
Managers ensure that employees have access to all the resources, and support they need to complete their tasks	1 2 3 4 5
Managers promote a strong sense of “team” among employees	1 2 3 4 5

Appendix 3. - Survey Questionnaire

Managers provide developmental opportunities to employees	1 2 3 4 5
Managers have entrepreneurial skills	1 2 3 4 5
Others (please specify)	1 2 3 4 5

Section H. – Organizational learning questions

15. **In thinking of your experiences with Saudi organizations generally, what are your perceptions of their CURRENT learning?** **Please rate whether you agree or disagree with the statements below**	Strongly Disagree — Strongly Agree
Organizational learning capabilities play a significant role in the capability of Saudi organizations to deal with change.	1 2 3 4 5
Knowledge is shared across all subsidiaries/divisions of Saudi organizations in the following:	
a) Technologies.	1 2 3 4 5
b) New product design and development.	1 2 3 4 5
c) Manufacturing activities.	1 2 3 4 5
d) Sales, marketing and distribution	1 2 3 4 5
Organizations have routines to identify, value, and import knowledge from internal and external sources	1 2 3 4 5
Organizations have appropriate routines to assimilate new knowledge.	1 2 3 4 5
Organizations are effective in transforming existing information into new knowledge.	1 2 3 4 5
Organizations are effective in utilizing knowledge in new products and services.	1 2 3 4 5
Organizations are effective in developing new knowledge that has the potential to influence service development.	1 2 3 4 5
Organizations have well documented routines and procedures for performing all operational processes.	1 2 3 4 5
Employees are knowledgeable and experienced in performing all operational processes	1 2 3 4 5
Organizations continually review and improve their operational processes when appropriate	1 2 3 4 5
Others (please specify)	1 2 3 4 5

Thank you for participating in this research project.

Please indicate by checking this box ☐ if you would like to receive a copy of the aggregated report of the research findings.

Appendix 4 - Preliminary analysis of Survey data

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Preliminary analysis

The purpose of conducting preliminary analysis of the data set is to confirm the correct statistical techniques are being used and to validate whether the research questions can be addressed.

Findings from preliminary analysis

A better understanding of the data has been formed from the preliminary analysis. For example, it has confirmed from the valid count that there is no missing data, and all responses are valid. A visual inspection of mean scores has suggested further selective investigations. For example, by a cross tabulation of 'Job level' and 'Tenure in job', gives more information that will be useful in investigating relationships between factors.

A test for normalcy was conducted for all factors and for the majority of factors gave moderately to approximately symmetric outcomes. Some interesting results that require further investigation were revealed in factors *7a Current Performance Goals* and *7b Future Performance Goals* that suggest a wide range of perspectives on how the performance of Saudi organizations should be measured. See *Figure 8.3 – 7a. Current Performance goal - Profitability* (below) and *Figure 8.4 – Future Performance goal - Profitability* (below).

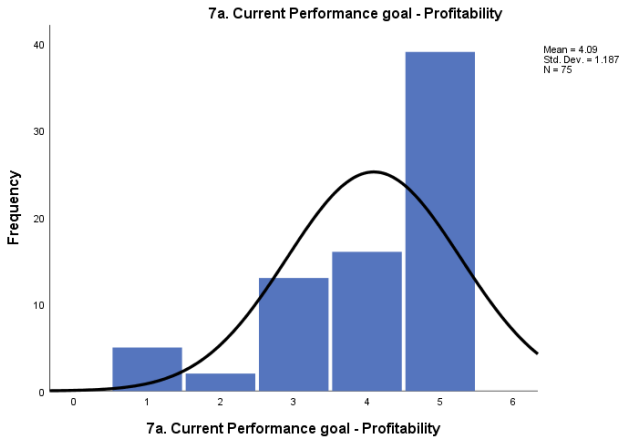

Figure 8.3 – 7a. Current Performance goal - Profitability

Appendix 4. - Preliminary analysis of Survey data

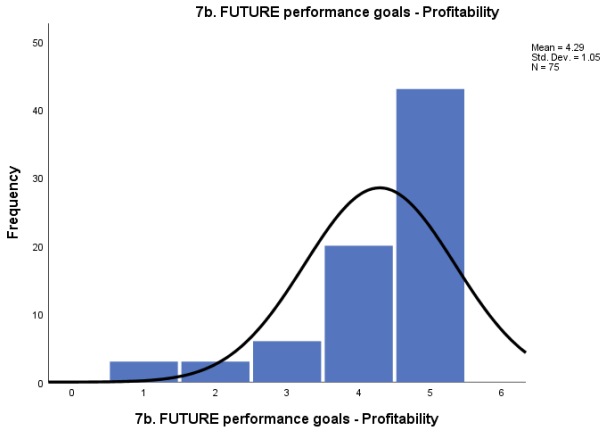

Figure 8.4 – Future Performance goal - Profitability

The preliminary analysis also revealed a number of 'reverse question' items where a high score is actually a negative. The scores for these questions will need to be reversed.

Descriptive Statistics

Descriptive statistics are used to describe the sample that is being used for this research project. Descriptive statistics include details such as mean, standard deviation, range of scores, skewness and kurtosis help ensure that 'assumptions' regarding tests are not being violated. In other words, confirming that the correct statistical technique is being used for the data type.

Categorical variables Q1 thru Q6

Question 1 thru 6 are categorical variables, so statistics such as minimum, maximum, mean, and standard deviation such as in *Table 2 Descriptive statistics of* (below) are pointless. Although the test does confirm that all responses are valid, that is, no values are missing.

	N	*Min*	*Max*	*M*	*SD*
1. Age of organization	75	1	3	2.48	.811
2. Size of organisation - #employees?	75	1	3	2.33	.777
3. Estimate of annual revenue	75	1	3	2.19	.865
4. Industry sector	75	1	4	2.51	1.201
5. Job level	75	1	3	2.24	.714
6. Tenure in job	75	1	3	1.67	.811
Valid N (listwise)	75				

Table 2 Descriptive statistics of Q1 thru Q6

Frequency statistics are more useful for categorical variables as it provides in-depth understanding of the component parts of each variable. For example, *Table 3 Frequency*

statistics of Q1 thru Q6 (below) provides the same count of valid responses as in Table 2 Descriptive statistics of Q1 thru Q6 (above), but without the unnecessary and irrelevant statistics.

		1. Age of organization	2. Size of organisation - #employees?	3. Estimate of annual revenue	4. Industry sector	5. Job level	6. Tenure in job
N	Valid	75	75	75	75	75	75
	Missing	0	0	0	0	0	0

Table 3 Frequency statistics of Q1 thru Q6

From *Table 4 - Q1. Age of organization* (below) the number of responses for each category are displayed. For example, the majority (68%) of responses relate to 'Mature' organizations of more than 25 years. This information is useful for confirming or rejecting the expectation derived from the literature that 'Mature' organizations will exhibit certain characteristics such as rigidity in their processes, culture, Leadership Capabilities, and organizational learning.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<=10 Years	15	20.0	20.0	20.0
	>10<=25 Years	9	12.0	12.0	32.0
	>25 years	51	68.0	68.0	100.0
	Total	75	100.0	100.0	

Table 4 - Q1. Age of organization

The literature suggests that the size of an organization has an influence on dynamic capabilities. The argument is that larger organizations are more likely to have the resources necessary to maintain dynamic capabilities. By comparing *Table 4 - Q1. Age of organization* (above) with *Table 5 - Q2. Size of organisation - #employees?* (below), it is possible to deduce that a number of 'Mature' organizations fit into the 'Mid-Size' category.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<=1000 Employees	14	18.7	18.7	18.7
	>1000 <= 10000 Employees	22	29.3	29.3	48.0
	> 10000 Employees	39	52.0	52.0	100.0
	Total	75	100.0	100.0	

Table 5 - Q2. Size of organisation - #employees?

An alternate measure of organizational size, is their annual revenue. By comparing aboveTable 5 - Q2. Size of organisation - #employees? (above) with Table 6 - Q3. Estimate of annual revenue (below), it is possible to deduce that not all 'Large' organizations earn more than $1Billion annually.

Appendix 4. - Preliminary analysis of Survey data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<= $100Million	22	29.3	29.3	29.3
	>$100Million<=$1Billion	17	22.7	22.7	52.0
	>$1Billion	36	48.0	48.0	100.0
	Total	75	100.0	100.0	

Table 6 - Q3. Estimate of annual revenue

In answering the research questions, particularly those that relate to the influence of organizational culture on dynamic capabilities, it will be useful to differentiate between industry sectors. For example, the literature suggests that well established and stable industries are less likely to have robust dynamic capabilities. For example, *Table 7 - Q4. Industry sector* (below), suggests that 41.3% of responses were from industries traditionally associated with Saudi Arabia (Oil & Gas, and Mining & Manufacturing), and considered well established and stable. A reasonable expectation based on the literature review is that these industries would not exhibit the same level of dynamic capabilities as those in the more rapidly changing industries.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Oil & Gas	25	33.3	33.3	33.3
	Mining & Manufacturing	6	8.0	8.0	41.3
	Services	25	33.3	33.3	74.7
	Other	19	25.3	25.3	100.0
	Total	75	100.0	100.0	

Table 7 - Q4. Industry sector

The Job level responses have been rationalised into four levels from the original six, making it easier to analyse. *Table 8 - Q5. Job level* (below) shows similar distribution (~40%) of responses between Manager and Employee job levels. Although the number of responses from Executive job levels is lower (16%), it is higher than expected.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Executive	12	16.0	16.0	16.0
	Manager	33	44.0	44.0	60.0
	Employee	30	40.0	40.0	100.0
	Total	75	100.0	100.0	

Table 8 - Q5. Job level

Table 9 - Q6. Tenure in job (below) shows a high number of responses (54.7%) with 5 or less years at their Job level. This is possibly associated with the high percentage of the Saudi population under 35 years of age and the interview data that suggests a high turnover of the ‘old guard’.

Appendix 4. - Preliminary analysis of Survey data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<=5 years	41	54.7	54.7	54.7
	>5years<=10years	18	24.0	24.0	78.7
	>10years	16	21.3	21.3	100.0
	Total	75	100.0	100.0	

Table 9 - Q6. Tenure in job

Table 10 – Cross tabulation of Q5. Job level & Q6. Tenure in job (below) provides further evidence of a shift in the make-up of leaders in Saudi organizations, in that 75% of Executives and 57.6% of Managers have been in their job for 5 or less years. The interviews gave some insight into a new generation of Executives in Saudi organizations, and a 'changing of the guard' with the retirement of many 'old timers'.

			6. Tenure in job			
			<=5 years	>5years <=10years	>10years	Total
5. Job level	Executive	Count	9	1	2	12
		% within 5. Job level	75.0%	8.3%	16.7%	100.0%
		% within 6. Tenure in job	22.0%	5.6%	12.5%	16.0%
	Manager	Count	19	7	7	33
		% within 5. Job level	57.6%	21.2%	21.2%	100.0%
		% within 6. Tenure in job	46.3%	38.9%	43.8%	44.0%
	Employee	Count	13	10	7	30
		% within 5. Job level	43.3%	33.3%	23.3%	100.0%
		% within 6. Tenure in job	31.7%	55.6%	43.8%	40.0%
	Total	Count	41	18	16	75
		% within 5. Job level	54.7%	24.0%	21.3%	100.0%
		% within 6. Tenure in job	100.0%	100.0%	100.0%	100.0%

Table 10 – Cross tabulation of Q5. Job level & Q6. Tenure in job

Q7a Current Performance Goals

The literature cautions researchers of attempting to use dynamic capabilities as a measurement of organizational performance. Respondents were in this case asked to score measures they might typically use as current (Q7a) and future (Q7b) performance goals. The rationale for this question is that the difference between how Respondents think the performance of their organizations are assessed now and in this future would provide insight into their perceptions of the dynamic nature of their organization's business environment.

		Profitability	Market share	Product range	Customer satisfaction	Shareholder value	Job creation
N	Valid	75	75	75	75	75	75
	Missing	0	0	0	0	0	0
	Mean	4.09	3.73	3.49	3.57	3.60	3.27
	Median	5.00	4.00	4.00	4.00	4.00	3.00
	Std. Deviation	1.187	1.107	1.083	1.141	1.185	1.082
	Skewness	-1.279	-.615	-.639	-.494	-.670	-.030

Std. Error of Skewness	.277	.277	.277	.277	.277	.277
Kurtosis	.863	-.266	.000	-.462	-.235	-.715
Std. Error of Kurtosis	.548	.548	.548	.548	.548	.548

Table 11 – Frequency Statistics Q7a – Current Performance Goals

Q7a. Current performance goal - Profitability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	5	6.7	6.7	6.7
	2	2	2.7	2.7	9.3
	3	13	17.3	17.3	26.7
	4	16	21.3	21.3	48.0
	5	39	52.0	52.0	100.0
	Total	75	100.0	100.0	

Table 12 - Q7a. Current Performance goal - Profitability

Q7a. Current performance goal - Market share

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	3	4.0	4.0	4.0
	2	7	9.3	9.3	13.3
	3	19	25.3	25.3	38.7
	4	24	32.0	32.0	70.7
	5	22	29.3	29.3	100.0
	Total	75	100.0	100.0	

Table 13 - Q7a. Current Performance goal – Market Share

Q7a. CURRENT performance goal - Product range

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	5	6.7	6.7	6.7
	2	7	9.3	9.3	16.0
	3	21	28.0	28.0	44.0
	4	30	40.0	40.0	84.0
	5	12	16.0	16.0	100.0
	Total	75	100.0	100.0	

Table 14 - Q7a. CURRENT performance goal - Product range

Q7a. CURRENT performance goal - Customer satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	4	5.3	5.3	5.3
	2	9	12.0	12.0	17.3
	3	20	26.7	26.7	44.0
	4	24	32.0	32.0	76.0
	5	18	24.0	24.0	100.0
	Total	75	100.0	100.0	

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Table 15 - Q7a. CURRENT performance goal - Customer satisfaction

Q7a. CURRENT performance goals - Shareholder value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	8.0	8.0	8.0
	2	6	8.0	8.0	16.0
	3	19	25.3	25.3	41.3
	4	25	33.3	33.3	74.7
	5	19	25.3	25.3	100.0
	Total	75	100.0	100.0	

Table 16 - Q7a. - CURRENT performance goals - Shareholder value

7a. CURRENT performance goals - Job creation

One of the aims of the Saudi Government's Vision 2030 strategic direction is 'Job Creation', however the scores in *Table 17 - Q7a. CURRENT performance goals - Job creation* (below) suggest that 58.7% of Respondents are neutral to job creation or consider it less than important.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	4.0	4.0	4.0
	2	16	21.3	21.3	25.3
	3	25	33.3	33.3	58.7
	4	20	26.7	26.7	85.3
	5	11	14.7	14.7	100.0
	Total	75	100.0	100.0	

Table 17 - Q7a. CURRENT performance goals - Job creation

Q7b Future Performance Goals

		Profitability	Market share	Product range	Customer satisfaction	Shareholder value	Job creation
N	Valid	75	75	75	75	75	75
	Missing	0	0	0	0	0	0
	Mean	4.29	4.16	4.04	4.07	3.89	3.59
	Median	5.00	4.00	4.00	4.00	4.00	4.00
	Std. Deviation	1.050	.987	.965	1.095	1.060	1.209
	Skewness	-1.700	-.937	-1.009	-1.151	-.761	-.468
	Std. Error of Skewness	.277	.277	.277	.277	.277	.277
	Kurtosis	2.469	-.215	1.049	.750	-.033	-.620
	Std. Error of Kurtosis	.548	.548	.548	.548	.548	.548

Table 18 - Frequency Statistics Q7b – Future Performance Goals

Q7b. FUTURE performance goals - Profitability

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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	4.0	4.0	4.0
	2	3	4.0	4.0	8.0
	3	6	8.0	8.0	16.0
	4	20	26.7	26.7	42.7
	5	43	57.3	57.3	100.0
	Total	75	100.0	100.0	

Table 19 - Q7b. Future performance goals - Profitability

Q7b. FUTURE performance goals - Market share

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	7	9.3	9.3	9.3
	3	10	13.3	13.3	22.7
	4	22	29.3	29.3	52.0
	5	36	48.0	48.0	100.0
	Total	75	100.0	100.0	

Table 20 - Q7b. Future performance goals – Market share

Q7b. FUTURE performance goals - Product range

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.7	2.7	2.7
	2	2	2.7	2.7	5.3
	3	15	20.0	20.0	25.3
	4	28	37.3	37.3	62.7
	5	28	37.3	37.3	100.0
	Total	75	100.0	100.0	

Table 21 - Q7b. Future performance goals – Product range

Q7b. FUTURE performance goals - Customer satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	4.0	4.0	4.0
	2	4	5.3	5.3	9.3
	3	12	16.0	16.0	25.3
	4	22	29.3	29.3	54.7
	5	34	45.3	45.3	100.0
	Total	75	100.0	100.0	

Table 22 - Q7b. Future performance goals – Customer satisfaction

Q7b. FUTURE performance goal - Shareholder value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.7	2.7	2.7
	2	6	8.0	8.0	10.7
	3	16	21.3	21.3	32.0
	4	25	33.3	33.3	65.3

	5	26	34.7	34.7	100.0
	Total	75	100.0	100.0	

Table 23 - Q7b. Future performance goals – Shareholder value

Q7b. FUTURE performance goals - Job creation

Marginal increase in 'importance' scores for 'Job Creation' from 14.7% (see *Table 17 - Q7a.* ***CURRENT performance goals - Job creation*** above) to 29.3% of Respondents scoring 'Job Creation' as 'High Importance'.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	5	6.7	6.7	6.7
	2	8	10.7	10.7	17.3
	3	22	29.3	29.3	46.7
	4	18	24.0	24.0	70.7
	5	22	29.3	29.3	100.0
	Total	75	100.0	100.0	

Q8 – Measures for comparison against competitors

		Higher profitability	Higher sales revenue growth rate	Larger market share	Better product range & quality than competitors	Speed and agility at meeting changing customer needs	Lower operating cost than competitors	More adaptable to new ideas
N	**Valid**	75	75	75	75	75	75	75
	Missing	0	0	0	0	0	0	0
	Mean	4.04	3.79	3.73	3.85	3.92	3.55	3.92
	Median	4.00	4.00	4.00	4.00	4.00	4.00	4.00
	Std. Deviation	.907	.963	.949	1.087	1.062	1.142	1.088
	Skewness	-.862	-.582	-.410	-.869	-.810	-.481	-1.003
	Std. Error of Skewness	.277	.277	.277	.277	.277	.277	.277
	Kurtosis	.681	.307	-.232	.222	.031	-.303	.718
	Std. Error of Kurtosis	.548	.548	.548	.548	.548	.548	.548

Table 24 - Frequency Statistics Q8 Measures for comparison against competitors.

Q8-1. Higher profitability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	1	1.3	1.3	1.3
	2	3	4.0	4.0	5.3
	3	14	18.7	18.7	24.0
	4	31	41.3	41.3	65.3
	5	26	34.7	34.7	100.0
	Total	75	100.0	100.0	

Table 25 – Q8. Measures for comparison against competitors - Higher profitability

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Q8-2. Higher sales revenue growth rate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	2	2.7	2.7	2.7
	2	3	4.0	4.0	6.7
	3	23	30.7	30.7	37.3
	4	28	37.3	37.3	74.7
	5	19	25.3	25.3	100.0
	Total	75	100.0	100.0	

Table 26 - Q8. Measures for comparison against competitors - Higher sales revenue growth rate

Q8-3. Larger market share

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	1	1.3	1.3	1.3
	2	6	8.0	8.0	9.3
	3	22	29.3	29.3	38.7
	4	29	38.7	38.7	77.3
	5	17	22.7	22.7	100.0
	Total	75	100.0	100.0	

Table 27 - Q8. Measures for comparison against competitors - Larger market share

Q8-4. Better product range & quality than competitors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	3	4.0	4.0	4.0
	2	6	8.0	8.0	12.0
	3	14	18.7	18.7	30.7
	4	28	37.3	37.3	68.0
	5	24	32.0	32.0	100.0
	Total	75	100.0	100.0	

Table 28 - Q8. Measures for comparison against competitors – Better product range & quality than competitors

Q8-5. Speed and agility at meeting changing customer needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	2	2.7	2.7	2.7
	2	6	8.0	8.0	10.7
	3	15	20.0	20.0	30.7
	4	25	33.3	33.3	64.0
	5	27	36.0	36.0	100.0
	Total	75	100.0	100.0	

Table 29 - Q8. Measures for comparison against competitors – Speed and agility at meeting changing customer needs

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Q8-6. Lower operating cost than competitors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	6.7	6.7	6.7
	2	6	8.0	8.0	14.7
	3	25	33.3	33.3	48.0
	4	21	28.0	28.0	76.0
	5	18	24.0	24.0	100.0
	Total	75	100.0	100.0	

Table 30 - Q8. Measures for comparison against competitors – Lower operating costs than competitors

Q8-7. More adaptable to new ideas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	5.3	5.3	5.3
	2	2	2.7	2.7	8.0
	3	17	22.7	22.7	30.7
	4	25	33.3	33.3	64.0
	5	27	36.0	36.0	100.0
	Total	75	100.0	100.0	

Table 31 - Q8. Measures for comparison against competitors – More adaptable to new ideas

Q9. How dynamic is change in your industry

The wording in items Q9-4 and Q9-6 are reversed, in that high scores indicates negative dynamic change. Reversing the questions also has the effect of helping to prevent Respondent bias. The scores for these two items will be reversed to ensure that the same characteristic is being scored.

		Products or services update quickly	The technology in our industry changes rapidly	It is difficult to predict changes in technology in our industry	Technology is our industry is very stable	It is difficult to predict changing customer needs	Our customers' needs rarely change
N	Valid	75	75	75	75	75	75
	Missing	0	0	0	0	0	0
Mean		3.27	3.57	2.93	3.17	2.69	2.93
Median		3.00	4.00	3.00	3.00	3.00	3.00
Std. Deviation		1.155	1.164	1.031	.935	.972	1.143
Skewness		-.436	-.578	.136	-.459	-.158	-.201
Std. Error of Skewness		.277	.277	.277	.277	.277	.277
Kurtosis		-.413	-.370	-.224	.359	-.567	-.715
Std. Error of Kurtosis		.548	.548	.548	.548	.548	.548

Table 32 - Frequency Statistics Q9 How dynamic is change in your industry

This factor is intended to give an indication of the level of change occurring within the Respondent's industry, however it contains two reverse questions where a high score indicates stability, not change.

Q9-1. Products or services update quickly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	8	10.7	10.7	10.7
	2	8	10.7	10.7	21.3
	3	25	33.3	33.3	54.7
	4	24	32.0	32.0	86.7
	5	10	13.3	13.3	100.0
	Total	75	100.0	100.0	

Table 33 - Q9 How dynamic is change in your industry – Products or services update quickly

Q9-2. The technology in our industry changes rapidly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	5	6.7	6.7	6.7
	2	8	10.7	10.7	17.3
	3	19	25.3	25.3	42.7
	4	25	33.3	33.3	76.0
	5	18	24.0	24.0	100.0
	Total	75	100.0	100.0	

Table 34 - Q9 How dynamic is change in your industry – The technology in our industry changes quickly

Q9-3. It is difficult to predict changes in technology in our industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	6	8.0	8.0	8.0
	2	18	24.0	24.0	32.0
	3	32	42.7	42.7	74.7
	4	13	17.3	17.3	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 35 - Q9 How dynamic is change in your industry – It is difficult to predict changes in technology in our industry

Q9-4. Technology in our industry is very stable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	5	6.7	6.7	6.7
	2	8	10.7	10.7	17.3
	3	35	46.7	46.7	64.0
	4	23	30.7	30.7	94.7
	5	4	5.3	5.3	100.0

	Total	75	100.0	100.0	

Table 36 - Q9 How dynamic is change in your industry – Technology in our industry is very stable

Q9-5. It is difficult to predict changing customer needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	10	13.3	13.3	13.3
	2	19	25.3	25.3	38.7
	3	31	41.3	41.3	80.0
	4	14	18.7	18.7	98.7
	5	1	1.3	1.3	100.0
	Total	75	100.0	100.0	

Table 37 - Q9 How dynamic is change in your industry – It is difficult to predict changing customer needs

Q9-6. Our customers' needs rarely change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	11	14.7	14.7	14.7
	2	13	17.3	17.3	32.0
	3	26	34.7	34.7	66.7
	4	20	26.7	26.7	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 38 - Q9 How dynamic is change in your industry – Our customers' needs rarely change

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Q10 – Sensing capabilities

The responses in *Table 39 - Frequency Statistics Q10 Sensing Capabilities* (below) are normally distributed. The wording in item SC-8 and SC-9 are reversed, in that high scores indicates negative sensing capabilities. Reversing the questions also has the effect of helping to prevent Respondent bias. The scores for these two items were reversed to ensure that the same characteristic is being scored.

		SC - 1	SC - 2	SC - 3	SC - 4	SC - 5	SC - 6	SC - 7	SC - 8	SC - 9	SC - 10
N	Valid	75	75	75	75	75	75	75	75	75	75
	Missing	0	0	0	0	0	0	0	0	0	0
	Mean	3.60	3.35	3.04	3.29	3.07	3.09	3.20	3.33	3.75	3.04
	Median	4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	3.00
	Std. Deviation	1.013	1.033	1.019	1.136	1.070	1.265	1.013	1.031	.988	.892
	Skewness	-.400	-.217	-.003	-.208	-.136	-.262	-.256	-.259	-.849	.155
	Std. Error of Skewness	.277	.277	.277	.277	.277	.277	.277	.277	.277	.277
	Kurtosis	-.276	-.117	-.297	-.647	-.283	-.885	-.069	-.157	.774	-.136
	Std. Error of Kurtosis	.548	.548	.548	.548	.548	.548	.548	.548	.548	.548

Table 39 - Frequency Statistics Q10 Sensing Capabilities

SC-1. Sensing new opportunities, threats and risk is a key capability for long-term survivability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.7	2.7	2.7
	2	8	10.7	10.7	13.3
	3	23	30.7	30.7	44.0
	4	27	36.0	36.0	80.0
	5	15	20.0	20.0	100.0
	Total	75	100.0	100.0	

Table 40 - SC-1. Sensing new opportunities, threats and risk is a key capability for long-term survivability

SC-2. Organizations gather information about opportunities, threats, and risks by well-established and followed processes.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	5.3	5.3	5.3
	2	8	10.7	10.7	16.0
	3	32	42.7	42.7	58.7
	4	20	26.7	26.7	85.3
	5	11	14.7	14.7	100.0
	Total	75	100.0	100.0	

Table 41 - SC-2. Organizations gather information about opportunities, threats, and risks by well-established and followed processes.

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SC-3. Organizations gather information about opportunities, threats, and risks by encouraging employees to look for, to discuss, and to report new opportunities, threats, and risks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	6.7	6.7	6.7
	2	16	21.3	21.3	28.0
	3	31	41.3	41.3	69.3
	4	17	22.7	22.7	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 42 - SC-3. Organizations gather information about opportunities, threats, and risks by encouraging employees to look for, to discuss, and to report new opportunities, threats, and risks

SC-4. Organizations gather information about opportunities, threats, and risks by encouraging employees to acquire and utilize new knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	6.7	6.7	6.7
	2	13	17.3	17.3	24.0
	3	24	32.0	32.0	56.0
	4	21	28.0	28.0	84.0
	5	12	16.0	16.0	100.0
	Total	75	100.0	100.0	

Table 43 - SC-4. Organizations gather information about opportunities, threats, and risks by encouraging employees to acquire and utilize new knowledge

SC-5. Organizations gather information about opportunities, threats, and risks via well-developed analytical systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	9.3	9.3	9.3
	2	12	16.0	16.0	25.3
	3	32	42.7	42.7	68.0
	4	17	22.7	22.7	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 44 - SC-5. Organizations gather information about opportunities, threats, and risks via well-developed analytical systems

SC-6. Organizations gather information about opportunities, threats, and risks via connections to universities, research organizations, and professional associations

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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	16.0	16.0	16.0
	2	10	13.3	13.3	29.3
	3	22	29.3	29.3	58.7
	4	21	28.0	28.0	86.7
	5	10	13.3	13.3	100.0
	Total	75	100.0	100.0	

Table 45 - SC-6. Organizations gather information about opportunities, threats, and risks via connections to universities, research organizations, and professional associations

SC-7. Organizations gather information about opportunities, threats, and risks via connections with industry affiliates.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	6.7	6.7	6.7
	2	10	13.3	13.3	20.0
	3	32	42.7	42.7	62.7
	4	21	28.0	28.0	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 46 - SC-7. Organizations gather information about opportunities, threats, and risks via connections with industry affiliates.

SC-8. Organizations prefer to rely on familiar technologies rather than adopt new technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	5.3	5.3	5.3
	2	9	12.0	12.0	17.3
	3	30	40.0	40.0	57.3
	4	22	29.3	29.3	86.7
	5	10	13.3	13.3	100.0
	Total	75	100.0	100.0	

Table 47 - SC-8. Organizations prefer to rely on familiar technologies rather than adopt new technologies

SC-9. Organizations prefer to adopt technologies that are well established in their industry.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	4.0	4.0	4.0
	2	4	5.3	5.3	9.3
	3	18	24.0	24.0	33.3
	4	34	45.3	45.3	78.7
	5	16	21.3	21.3	100.0
	Total	75	100.0	100.0	

Table 48 - SC-9. Organizations prefer to adopt technologies that are well established in their industry.

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SC-10. Organizations can easily predict the impact of changes to their internal and external environments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.7	2.7	2.7
	2	18	24.0	24.0	26.7
	3	34	45.3	45.3	72.0
	4	17	22.7	22.7	94.7
	5	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

Table 49 - SC-10. Organizations can easily predict the impact of changes to their internal and external environments

Q11 – Seizing capabilities

		SE - 1	SE - 2	SE - 3	SE - 4	SE - 5	SE - 6	SE - 7	SE - 8
N	Valid	75	75	75	75	75	75	75	75
	Missing	0	0	0	0	0	0	0	0
	Mean	3.20	3.11	2.97	2.81	3.05	2.71	2.81	2.79
	Median	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	Std. Deviation	1.013	.994	.900	1.062	1.064	1.100	1.036	1.131
	Skewness	-.016	-.134	.053	.176	.030	.299	.087	.204
Std. Error of Skewness		.277	.277	.277	.277	.277	.277	.277	.277
	Kurtosis	-.436	-.410	-.713	-.404	-.542	-.495	-.394	-.810
Std. Error of Kurtosis		.548	.548	.548	.548	.548	.548	.548	.548

Table 50 - Frequency Statistics Q11 Seizing Capabilities

SE-1. Seizing is a key capability to ensure prompt and appropriate action to realise opportunities and to counter threats and risks.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	4.0	4.0	4.0
	2	15	20.0	20.0	24.0
	3	29	38.7	38.7	62.7
	4	20	26.7	26.7	89.3
	5	8	10.7	10.7	100.0
	Total	75	100.0	100.0	

Table 51 - SE-1. Seizing is a key capability to ensure prompt and appropriate action to realise opportunities and to counter threats and risks.

SE-2. Organizations are able to seize most business opportunities when they emerge.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	5.3	5.3	5.3
	2	16	21.3	21.3	26.7
	3	28	37.3	37.3	64.0

	4	22	29.3	29.3	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 52 - SE-2. Organizations are able to seize most business opportunities when they emerge.

SE-3. Organizations are able to catch many new opportunities available in the market.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	2	2.7	2.7	2.7
	2	23	30.7	30.7	33.3
	3	27	36.0	36.0	69.3
	4	21	28.0	28.0	97.3
	5	2	2.7	2.7	100.0
	Total	75	100.0	100.0	

Table 53 - SE-3. Organizations are able to catch many new opportunities available in the market.

SE-4. Organizations are able to capture new R&D opportunities whenever they appear.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	8	10.7	10.7	10.7
	2	21	28.0	28.0	38.7
	3	28	37.3	37.3	76.0
	4	13	17.3	17.3	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 54 - SE-4. Organizations are able to capture new R&D opportunities whenever they appear.

SE-5. Organizations are able to grab new product development opportunities resulting from changes in technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	5	6.7	6.7	6.7
	2	18	24.0	24.0	30.7
	3	27	36.0	36.0	66.7
	4	18	24.0	24.0	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 55 - SE-5. Organizations are able to grab new product development opportunities resulting from changes in technologies

SE-6. Organizations quickly deal with conflicts in the strategic decision-making process.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	10	13.3	13.3	13.3

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	2	24	32.0	32.0	45.3
	3	24	32.0	32.0	77.3
	4	12	16.0	16.0	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 56 - SE-6. Organizations quickly deal with conflicts in the strategic decision-making process.

SE-7. Organizations make timely decisions to deal with strategic problems.

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**1**	8	10.7	10.7	10.7
	2	20	26.7	26.7	37.3
	3	29	38.7	38.7	76.0
	4	14	18.7	18.7	94.7
	5	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

Table 57 - SE-7. Organizations make timely decisions to deal with strategic problems.

SE-8. Organizations are not constrained by past decisions in making new strategic decisions

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**1**	9	12.0	12.0	12.0
	2	25	33.3	33.3	45.3
	3	19	25.3	25.3	70.7
	4	17	22.7	22.7	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 58 - SE-8. Organizations are not constrained by past decisions in making new strategic decisions

Q12 – Reconfiguration capabilities

		RE - 1	**RE - 2**	**RE - 3**	**RE - 4**	**RE - 5**	**RE - 6**
N	**Valid**	75	75	75	75	75	75
	Missing	0	0	0	0	0	0
	Mean	3.17	3.03	3.11	3.00	3.19	2.97
	Median	3.00	3.00	3.00	3.00	3.00	3.00
	Std. Deviation	1.212	1.162	1.146	1.139	1.087	1.230
	Skewness	-.202	-.053	-.048	.169	.071	.141
	Std. Error of Skewness	.277	.277	.277	.277	.277	.277
	Kurtosis	-.837	-.778	-.799	-.722	-.785	-1.015
	Std. Error of Kurtosis	.548	.548	.548	.548	.548	.548

Table 59 - Frequency Statistics Q12 Reconfiguration capabilities

RE-1. Managing change and the reconfiguration of assets is a key organizational capability.

	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**

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Valid	**1**	8	10.7	10.7	10.7
	2	14	18.7	18.7	29.3
	3	21	28.0	28.0	57.3
	4	21	28.0	28.0	85.3
	5	11	14.7	14.7	100.0
	Total	75	100.0	100.0	

Table 60 - RE-1. Managing change and the reconfiguration of assets is a key organizational capability.

RE-2. Organizations constantly align their management methods, business models, and structures to the changing business environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	8	10.7	10.7	10.7
	2	17	22.7	22.7	33.3
	3	23	30.7	30.7	64.0
	4	19	25.3	25.3	89.3
	5	8	10.7	10.7	100.0
	Total	75	100.0	100.0	

Table 61 - RE-2. Organizations constantly align their management methods, business models, and structures to the changing business environment

RE-3. Organizations encourage all sections of the organization to support each other's change initiatives.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	6	8.0	8.0	8.0
	2	18	24.0	24.0	32.0
	3	22	29.3	29.3	61.3
	4	20	26.7	26.7	88.0
	5	9	12.0	12.0	100.0
	Total	75	100.0	100.0	

Table 62 - Organizations encourage all sections of the organization to support each other's change initiatives.

RE-4. Organizations encourage employees to look for, and implement incremental changes to existing practices, products, and asset operations.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	6	8.0	8.0	8.0
	2	21	28.0	28.0	36.0
	3	24	32.0	32.0	68.0
	4	15	20.0	20.0	88.0
	5	9	12.0	12.0	100.0
	Total	75	100.0	100.0	

Table 63 - RE-4. Organizations encourage employees to look for, and implement incremental changes to existing practices, products, and asset operations.

RE-5. Organizations encourage their employees to replace outdated knowledge.

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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	4.0	4.0	4.0
	2	19	25.3	25.3	29.3
	3	24	32.0	32.0	61.3
	4	19	25.3	25.3	86.7
	5	10	13.3	13.3	100.0
	Total	75	100.0	100.0	

Table 64 - RE-5. Organizations encourage their employees to replace outdated knowledge.

RE-6. Organizations encourage their managers and supervisors to support their employees if they want to try new ways of doing things.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	10.7	10.7	10.7
	2	23	30.7	30.7	41.3
	3	17	22.7	22.7	64.0
	4	17	22.7	22.7	86.7
	5	10	13.3	13.3	100.0
	Total	75	100.0	100.0	

Table 65 - RE-6. Organizations encourage their managers and supervisors to support their employees if they want to try new ways of doing things.

Q13 – Organizational culture

		OC - 1	OC - 2	OC - 3	OC - 4	OC - 5	OC - 6	OC - 7	OC - 8	OC - 9
N	Valid	75	75	75	75	75	75	75	75	75
	Missing	0	0	0	0	0	0	0	0	0
	Mean	3.47	3.09	2.88	2.92	3.00	2.95	3.12	3.05	3.19
	Median	4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	Std. Deviation	1.277	1.243	1.065	1.100	1.151	1.089	1.102	.999	.996
	Skewness	-.384	-.051	.038	-.026	-.055	.173	-.181	.142	-.219
	Std. Error of Skewness	.277	.277	.277	.277	.277	.277	.277	.277	.277
	Kurtosis	-.947	-1.041	-.444	-.945	-.803	-.565	-.668	-.493	-.262
	Std. Error of Kurtosis	.548	.548	.548	.548	.548	.548	.548	.548	.548

Table 66 - Frequency Statistics Q13 Organizational culture

OC-1. Organizational culture (values, beliefs, and trust) play a significant role in the capability of Saudi organizations to deal with change.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	8.0	8.0	8.0
	2	13	17.3	17.3	25.3
	3	16	21.3	21.3	46.7
	4	20	26.7	26.7	73.3
	5	20	26.7	26.7	100.0
	Total	75	100.0	100.0	

Table 67 - OC-1. Organizational culture (values, beliefs, and trust) play a significant role in the capability of Saudi organizations to deal with change.

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OC-2. There is a high level of trust throughout Saudi organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	10.7	10.7	10.7
	2	19	25.3	25.3	36.0
	3	17	22.7	22.7	58.7
	4	20	26.7	26.7	85.3
	5	11	14.7	14.7	100.0
	Total	75	100.0	100.0	

Table 68 - OC-2. There is a high level of trust throughout Saudi organizations

OC-3. Employees have a high level of trust in their managers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	10.7	10.7	10.7
	2	18	24.0	24.0	34.7
	3	29	38.7	38.7	73.3
	4	15	20.0	20.0	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 69 - OC-3. Employees have a high level of trust in their managers

OC-4. People are held accountable for their promises.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	9.3	9.3	9.3
	2	23	30.7	30.7	40.0
	3	18	24.0	24.0	64.0
	4	23	30.7	30.7	94.7
	5	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

Table 70 - OC-4. People are held accountable for their promises.

OC-5. Managers typically trust their subordinates to make good decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	10.7	10.7	10.7
	2	18	24.0	24.0	34.7
	3	22	29.3	29.3	64.0
	4	20	26.7	26.7	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 71 - OC-5. Managers typically trust their subordinates to make good decisions

OC-6. Managers typically allow subordinates autonomy to do their work

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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	6	8.0	8.0	8.0
	2	21	28.0	28.0	36.0
	3	26	34.7	34.7	70.7
	4	15	20.0	20.0	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 72 - OC-6. Managers typically allow subordinates autonomy to do their work

OC-7. Employees are typically able to self-manage their time and tasks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	8.0	8.0	8.0
	2	16	21.3	21.3	29.3
	3	23	30.7	30.7	60.0
	4	23	30.7	30.7	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 73 - OC-7. Employees are typically able to self-manage their time and tasks

OC-8. Employees can typically take action on their tasks without referring to their supervisor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	3	4.0	4.0	4.0
	2	20	26.7	26.7	30.7
	3	28	37.3	37.3	68.0
	4	18	24.0	24.0	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 74 - Q13. Employees can typically take action on their tasks without referring to their supervisor

OC-9. Employees trust the competence of others and reciprocate faith and trust

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	4	5.3	5.3	5.3
	2	13	17.3	17.3	22.7
	3	29	38.7	38.7	61.3
	4	23	30.7	30.7	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 75 - Q13. Employees trust the competence of others and reciprocate faith and trust

Q14 – Leadership capabilities

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		LC - 1	LC - 2	LC - 3	LC - 4	LC - 5	LC - 6	LC - 7	LC - 8	LC - 9	LC - 10
N	Valid	75	75	75	75	75	75	75	75	75	75
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		3.80	3.25	2.99	3.00	3.49	3.15	2.99	3.00	3.01	2.71
Median		4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Std. Deviation		1.103	1.140	1.257	1.053	1.107	1.123	1.109	1.090	1.121	1.010
Skewness		-.646	-.125	.110	.143	-.105	-.179	.088	.064	.210	.220
Std. Error of Skewness		.277	.277	.277	.277	.277	.277	.277	.277	.277	.277
Kurtosis		-.417	-.687	-.887	-.428	-.861	-.497	-.728	-.597	-.715	-.403
Std. Error of Kurtosis		.548	.548	.548	.548	.548	.548	.548	.548	.548	.548

Table 76 - Frequency Statistics Q14 Leadership Capabilities

LC-1. Leadership capabilities play a significant role in the capability of Saudi organizations to deal with change.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.7	2.7	2.7
	2	9	12.0	12.0	14.7
	3	15	20.0	20.0	34.7
	4	25	33.3	33.3	68.0
	5	24	32.0	32.0	100.0
	Total	75	100.0	100.0	

Table 77 - Leadership Capabilities play a significant role in the capability of Saudi organizations to deal with change.

LC-2. Employees are encouraged to problem solve

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	6.7	6.7	6.7
	2	14	18.7	18.7	25.3
	3	25	33.3	33.3	58.7
	4	19	25.3	25.3	84.0
	5	12	16.0	16.0	100.0
	Total	75	100.0	100.0	

Table 78 - Q14. Employees are encouraged to problem solve

LC-3. Employees are encouraged to "think outside of the box"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	13.3	13.3	13.3
	2	17	22.7	22.7	36.0
	3	24	32.0	32.0	68.0
	4	12	16.0	16.0	84.0
	5	12	16.0	16.0	100.0
	Total	75	100.0	100.0	

Table 79 - Q14. Employees are encouraged to "think outside of the box"

Appendix 4. - Preliminary analysis of Survey data

LC-4. Employees' original ideas are highly valued

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	6.7	6.7	6.7
	2	19	25.3	25.3	32.0
	3	29	38.7	38.7	70.7
	4	15	20.0	20.0	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 80 - Q14. Employees' original ideas are highly valued

LC-5. Managers do not want their "view of the world" to be questioned

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.7	2.7	2.7
	2	12	16.0	16.0	18.7
	3	26	34.7	34.7	53.3
	4	17	22.7	22.7	76.0
	5	18	24.0	24.0	100.0
	Total	75	100.0	100.0	

Table 81 - Q14. Managers do not want their "view of the world" to be questioned

LC-6. Managers ensure that the work of all employees is coordinated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	9.3	9.3	9.3
	2	12	16.0	16.0	25.3
	3	28	37.3	37.3	62.7
	4	19	25.3	25.3	88.0
	5	9	12.0	12.0	100.0
	Total	75	100.0	100.0	

Table 82 - Q14. Managers ensure that the work of all employees is coordinated

LC-7. Managers ensure that employees have access to all the resources, and support they need to complete their tasks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	8.0	8.0	8.0
	2	21	28.0	28.0	36.0
	3	23	30.7	30.7	66.7
	4	18	24.0	24.0	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 83 - Q14. Managers ensure that employees have access to all the resources, and support they need to complete their tasks

LC-8. Managers promote a strong sense of "team" among employees

Appendix 4. - Preliminary analysis of Survey data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	8.0	8.0	8.0
	2	19	25.3	25.3	33.3
	3	26	34.7	34.7	68.0
	4	17	22.7	22.7	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 84 - Q14. Managers promote a strong sense of "team" among employees

LC-9. Managers provide developmental opportunities to employees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	6.7	6.7	6.7
	2	22	29.3	29.3	36.0
	3	24	32.0	32.0	68.0
	4	15	20.0	20.0	88.0
	5	9	12.0	12.0	100.0
	Total	75	100.0	100.0	

Table 85 - Q14. Managers provide developmental opportunities to employees

LC-10. Managers have entrepreneurial skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	10.7	10.7	10.7
	2	25	33.3	33.3	44.0
	3	26	34.7	34.7	78.7
	4	13	17.3	17.3	96.0
	5	3	4.0	4.0	100.0
	Total	75	100.0	100.0	

Table 86 - Q14. Managers have entrepreneurial skills

Q15 – Organizational learning

		OL - 1	OL - 2	OL - 3	OL - 4	OL - 5	OL - 6	OL - 7	OL - 8	OL - 9	OL - 10	OL - 11	OL - 12	OL - 13
N	Valid	75	75	75	75	75	75	75	75	75	75	75	75	75
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		3.51	2.95	2.87	2.81	2.91	2.92	2.79	2.79	2.85	2.81	3.16	3.21	3.11
Median		4.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Std. Deviation		1.167	1.077	1.178	1.147	1.093	1.171	1.177	1.106	1.123	1.062	1.128	.977	1.060
Skewness		-.410	-.025	.214	.157	.189	.159	.071	.253	.179	-.102	-.324	-.267	-.078
Std. Error of Skewness		.277	.277	.277	.277	.277	.277	.277	.277	.277	.277	.277	.277	.277
Kurtosis		-.699	-.639	-.762	-.720	-.462	-.821	-.739	-.483	-.718	-.888	-.669	-.454	-.233
Std. Error of Kurtosis		.548	.548	.548	.548	.548	.548	.548	.548	.548	.548	.548	.548	.548

Table 87 - Frequency Statistics Q15 Organizational learning

Appendix 4. - Preliminary analysis of Survey data

OL-1. Organizational learning capabilities play a significant role in the capability of Saudi organizations to deal with change.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	4	5.3	5.3	5.3
	2	12	16.0	16.0	21.3
	3	18	24.0	24.0	45.3
	4	24	32.0	32.0	77.3
	5	17	22.7	22.7	100.0
	Total	75	100.0	100.0	

Table 88 - Organizational learning capabilities play a significant role in the capability of Saudi organizations to deal with change.

OL-2. Knowledge of technologies is shared across all subsidiaries/divisions of Saudi organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	7	9.3	9.3	9.3
	2	19	25.3	25.3	34.7
	3	25	33.3	33.3	68.0
	4	19	25.3	25.3	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 89 - Q15. Knowledge of technologies is shared across all subsidiaries/divisions of Saudi organizations

OL-3. Knowledge of new product design and development is shared across all subsidiaries/divisions of Saudi organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	9	12.0	12.0	12.0
	2	22	29.3	29.3	41.3
	3	22	29.3	29.3	70.7
	4	14	18.7	18.7	89.3
	5	8	10.7	10.7	100.0
	Total	75	100.0	100.0	

Table 90 - Q15. Knowledge of new product design and development is shared across all subsidiaries/divisions of Saudi organizations

OL-4. Knowledge of manufacturing activities is shared across all subsidiaries/divisions of Saudi organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	10	13.3	13.3	13.3
	2	21	28.0	28.0	41.3

	3	23	30.7	30.7	72.0
	4	15	20.0	20.0	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 91 - Q15. Knowledge of manufacturing activities is shared across all subsidiaries/divisions of Saudi organizations

OL-5. Knowledge of sales, marketing and distribution is shared across all subsidiaries/divisions of Saudi organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	7	9.3	9.3	9.3
	2	20	26.7	26.7	36.0
	3	28	37.3	37.3	73.3
	4	13	17.3	17.3	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 92 - Q15. Knowledge of sales, marketing and distribution is shared across all subsidiaries/divisions of Saudi organizations

OL-6. Organizations have routines to identify, value, and import knowledge from internal and external sources.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	8	10.7	10.7	10.7
	2	22	29.3	29.3	40.0
	3	21	28.0	28.0	68.0
	4	16	21.3	21.3	89.3
	5	8	10.7	10.7	100.0
	Total	75	100.0	100.0	

Table 93 - Q15. Organizations have routines to identify, value, and import knowledge from internal and external sources.

OL-7. Organizations have appropriate routines to assimilate new knowledge.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	13	17.3	17.3	17.3
	2	16	21.3	21.3	38.7
	3	26	34.7	34.7	73.3
	4	14	18.7	18.7	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 94 - Q15. Organizations have appropriate routines to assimilate new knowledge.

OL-8. Organizations are effective in transforming existing information into new knowledge.

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		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	12.0	12.0	12.0
	2	22	29.3	29.3	41.3
	3	26	34.7	34.7	76.0
	4	12	16.0	16.0	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 95 - Q15. Organizations are effective in transforming existing information into new knowledge.

OL-9. Organizations are effective in utilizing knowledge in new products and services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	10.7	10.7	10.7
	2	23	30.7	30.7	41.3
	3	22	29.3	29.3	70.7
	4	16	21.3	21.3	92.0
	5	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table 96 – Q15. Organizations are effective in utilizing knowledge in new products and services.

OL-10. Organizations are effective in developing new knowledge that has the potential to influence service development.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	12.0	12.0	12.0
	2	21	28.0	28.0	40.0
	3	22	29.3	29.3	69.3
	4	21	28.0	28.0	97.3
	5	2	2.7	2.7	100.0
	Total	75	100.0	100.0	

Table 97 – Q15. Organizations are effective in developing new knowledge that has the potential to influence service development.

OL-11. Organizations have well documented routines and procedures for performing operational processes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	9.3	9.3	9.3
	2	14	18.7	18.7	28.0
	3	21	28.0	28.0	56.0
	4	26	34.7	34.7	90.7
	5	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

Table 98 – Q15. Organizations have well documented routines and procedures for performing operational processes

Appendix 4. - Preliminary analysis of Survey data

OL-12. Employees are knowledgeable and experienced in performing all operational processes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	3	4.0	4.0	4.0
	2	15	20.0	20.0	24.0
	3	25	33.3	33.3	57.3
	4	27	36.0	36.0	93.3
	5	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table 99 – Q15. Employees are knowledgeable and experienced in performing all operational processes

OL-13. Organizations continually review and improve their operational processes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**1**	6	8.0	8.0	8.0
	2	12	16.0	16.0	24.0
	3	33	44.0	44.0	68.0
	4	16	21.3	21.3	89.3
	5	8	10.7	10.7	100.0
	Total	75	100.0	100.0	

Table 100 – Q15. Organizations continually review and improve their operational processes

Appendix 4. - Preliminary analysis of Survey data

Normalcy Testing - Skewness and Kurtosis

The purpose for conducting normalcy tests is to determine whether the data being analysed is normally distributed and therefore suitable for those statistical functions that expect the data to be distributed normally or very close to normal. The two statistical measures of shape or normalcy are skewness and excess kurtosis. If skewness is not close to zero, then the data set is not normally distributed.

Skewness essentially measures the asymmetry of the probability distribution of a variable about its mean. A zero skewness value suggests that the data are perfectly symmetrical, however it is more likely that the skewness value will be positive or negative.

Kurtosis relates to how 'flat' or 'peaky' the data distribution is.

Evaluation of normalcy

Based on the notion that skewness values between -0.5 and 0.5, suggest a distribution that is approximately symmetric, we can determine that, with one exception, the variables listed in *Table 101 - Evaluation of normalcy of* continuous variables (below) are approximately symmetric. As the skewness value for the exception variable in Table 101 (Sensing Capabilities) is between -1 and -.05, we can determine that the variable is moderately symmetric, and 'good to go'.

Q9 – Q15 Total scores

						Skewness		Kurtosis	
	N	*Min*	*Max*	*M*	*SD*	Statistic	Std. Error	Statistic	Std. Error
Industry Sector Dynamics	75	9.00	26.00	18.5733	3.59494	-.406	.277	.419	.548
Sensing Capabilities	75	10.00	43.00	29.4133	6.13826	-.817	.277	1.480	.548
Seizing Capabilities	75	12.00	36.00	23.1200	5.57494	.205	.277	-.283	.548
Reconfiguration Capabilities	75	6.00	30.00	18.1600	5.52645	.082	.277	-.552	.548
Organizational Culture	75	11.00	42.00	27.0267	7.19980	.077	.277	-.349	.548
Leadership Capabilities	75	11.00	50.00	30.5867	7.41090	.188	.277	-.057	.548
Organizational Learning	75	13.00	62.00	37.9333	10.72044	-.063	.277	-.219	.548
Valid N (listwise)	75								

Table 101 - Evaluation of normalcy of continuous variables

Q7a – Current Performance Goals

Appendix 4. - Preliminary analysis of Survey data

Based on the notion that skewness values that exceed -1.0 suggest a distribution that is not symmetric, we can determine that, the scores for *profitability* in *Table 102 - Evaluation of normalcy of Q7a – Current Performance Goals* (below) is not normally distributed. As the 5% Trimmed Mean for this item is 4.21, the difference suggests further investigation.

						Skewness		Kurtosis	
	N	*Min*	*Max*	*M*	*SD*	Statistic	Std. Error	Statistic	Std. Error
7a. Profitability	75	1	5	4.09	1.187	-1.279	.277	.863	.548
7a. Market share	75	1	5	3.73	1.107	-.615	.277	-.266	.548
7a. Product range	75	1	5	3.49	1.083	-.639	.277	.000	.548
7a. Customer satisfaction	75	1	5	3.57	1.141	-.494	.277	-.462	.548
7a. Shareholder value	75	1	5	3.60	1.185	-.670	.277	-.235	.548
7a. Job creation	75	1	5	3.27	1.082	-.030	.277	-.715	.548
Valid N (listwise)	75								

Table 102 - Evaluation of normalcy of Q7a – Current Performance Goals

Q7b – Future Performance Goals

Seems to indicate significant differences of Respondent's opinion on how the organizations will be assessed in the future. Only real agreements seems to be on the issue of 'Job Creation'.

						Skewness		Kurtosis	
	N	*Min*	*Max*	*M*	*SD*	Statistic	Std. Error	Statistic	Std. Error
7b. Profitability	75	1	5	4.29	1.050	-1.700	.277	2.469	.548
7b. Market share	75	2	5	4.16	.987	-.937	.277	-.215	.548
7b. Product range	75	1	5	4.04	.965	-1.009	.277	1.049	.548
7b. Customer satisfaction	75	1	5	4.07	1.095	-1.151	.277	.750	.548
7b. Shareholder value	75	1	5	3.89	1.060	-.761	.277	-.033	.548
7b. Job creation	75	1	5	3.59	1.209	-.468	.277	-.620	.548
Valid N (listwise)	75								

Table 103 - Evaluation of normalcy of Q7b – Future Performance Goals

Q8 – Measures for comparison against competitors

The skewness values in *Table 104 - Evaluation of normalcy of Q8 Measures for comparison against competitors* (below) are with one exception, between -1.0 and 0 suggesting a distribution of scores for this factor (Q8) that are moderately to approximately symmetric.

						Skewness		Kurtosis	
	N	*Min*	*Max*	*M*	*SD*	Statistic	Std. Error	Statistic	Std. Error
Higher profitability	75	1	5	4.04	.907	-.862	.277	.681	.548

Higher sales revenue growth rate	75	1	5	3.79	.963	-.582	.277	.307	.548
Larger market share	75	1	5	3.73	.949	-.410	.277	-.232	.548
Better product range & quality than competitors	75	1	5	3.85	1.087	-.869	.277	.222	.548
Speed and agility at meeting changing customer needs	75	1	5	3.92	1.062	-.810	.277	.031	.548
Lower operating cost than competitors	75	1	5	3.55	1.142	-.481	.277	-.303	.548
More adaptable to new ideas	75	1	5	3.92	1.088	-1.003	.277	.718	.548
Valid N (listwise)	75								

Table 104 - Evaluation of normalcy of Q8 Measures for comparison against competitors

Q9 – How dynamic is change in your industry

The skewness values in *Table 105 - Evaluation of normalcy of Q9 How dynamic is change in your industry* (below) are all between -1.0 and 0 suggesting a distribution of scores for this factor (Q9) that are moderately to approximately symmetric.

	N	*Min*	*Max*	*Mean*	*SD*	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Products or services update quickly	75	1	5	3.27	1.155	-.436	.277	-.413	.548
The technology in our industry changes rapidly	75	1	5	3.57	1.164	-.578	.277	-.370	.548
It is difficult to predict changes in technology in our industry	75	1	5	2.93	1.031	.136	.277	-.224	.548
Technology is our industry is very stable	75	1	5	3.17	.935	-.459	.277	.359	.548
It is difficult to predict changing customer needs	75	1	5	2.69	.972	-.158	.277	-.567	.548
Our customers' needs rarely change	75	1	5	2.93	1.143	-.201	.277	-.715	.548
Valid N (listwise)	75								

Table 105 - Evaluation of normalcy of Q9 How dynamic is change in your industry

Q10 – Sensing capabilities

The skewness values in *Table 106 - Evaluation of normalcy of Q10 Sensing Capabilities* (below) are with one exception, between -1.0 and 0 suggesting a distribution of scores for this factor (Q10) that are moderately to approximately symmetric.

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	N	Min	Max	M	SD	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
SC - 1	75	1	5	3.60	1.013	-.400	.277	-.276	.548
SC - 2	75	1	5	3.35	1.033	-.217	.277	-.117	.548
SC - 3	75	1	5	3.04	1.019	-.003	.277	-.297	.548
SC - 4	75	1	5	3.29	1.136	-.208	.277	-.647	.548
SC - 5	75	1	5	3.07	1.070	-.136	.277	-.283	.548
SC - 6	75	1	5	3.09	1.265	-.262	.277	-.885	.548
SC - 7	75	1	5	3.20	1.013	-.256	.277	-.069	.548
SC - 8	75	1	5	3.33	1.031	-.259	.277	-.157	.548
SC - 9	75	1	5	3.75	.988	-.849	.277	.774	.548
SC - 10	75	1	5	3.04	.892	.155	.277	-.136	.548
Valid N (listwise)	75								

Table 106 - Evaluation of normalcy of Q10 Sensing Capabilities

Q11 – Seizing capabilities

The skewness values in Table 107 – Evaluation of normalcy of Q11 Seizing Capabilities (below) are all between -.5 and 0.5 suggesting a distribution of scores for this factor (Q11) that are approximately symmetric.

	N	Min	Max	M	SD	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
SE - 1	75	1	5	3.20	1.013	-.016	.277	-.436	.548
SE - 2	75	1	5	3.11	.994	-.134	.277	-.410	.548
SE - 3	75	1	5	2.97	.900	.053	.277	-.713	.548
SE - 4	75	1	5	2.81	1.062	.176	.277	-.404	.548
SE - 5	75	1	5	3.05	1.064	.030	.277	-.542	.548
SE - 6	75	1	5	2.71	1.100	.299	.277	-.495	.548
SE - 7	75	1	5	2.81	1.036	.087	.277	-.394	.548
SE - 8	75	1	5	2.79	1.131	.204	.277	-.810	.548
Valid N (listwise)	75								

Table 107 – Evaluation of normalcy of Q11 Seizing Capabilities

Q12 – Reconfiguration capabilities

The skewness values in *Table 108 - Evaluation of normalcy of Q12 Reconfiguration capabilities* (below) are all between -.5 and 0.5 suggesting a distribution of scores for this factor (Q12) that are approximately symmetric.

	N	Min	Max	M	SD	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
RE - 1	75	1	5	3.17	1.212	-.202	.277	-.837	.548
RE - 2	75	1	5	3.03	1.162	-.053	.277	-.778	.548
RE - 3	75	1	5	3.11	1.146	-.048	.277	-.799	.548
RE - 4	75	1	5	3.00	1.139	.169	.277	-.722	.548
RE - 5	75	1	5	3.19	1.087	.071	.277	-.785	.548
RE - 6	75	1	5	2.97	1.230	.141	.277	-1.015	.548

Valid N (listwise)	75									

Table 108 - Evaluation of normalcy of Q12 Reconfiguration capabilities

Q13 – Organizational culture

The skewness values in *Table 109 - Evaluation of normalcy of Q13 Organizational culture* (below) are all between -.5 and 0.5 suggesting a distribution of scores for this factor (Q13) that are approximately symmetric.

						Skewness		Kurtosis	
	N	***Min***	***Max***	***M***	***SD***	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
OC - 1	75	1	5	3.47	1.277	-.384	.277	-.947	.548
OC - 2	75	1	5	3.09	1.243	-.051	.277	-1.041	.548
OC - 3	75	1	5	2.88	1.065	.038	.277	-.444	.548
OC - 4	75	1	5	2.92	1.100	-.026	.277	-.945	.548
OC - 5	75	1	5	3.00	1.151	-.055	.277	-.803	.548
OC - 6	75	1	5	2.95	1.089	.173	.277	-.565	.548
OC - 7	75	1	5	3.12	1.102	-.181	.277	-.668	.548
OC - 8	75	1	5	3.05	.999	.142	.277	-.493	.548
OC - 9	75	1	5	3.19	.996	-.219	.277	-.262	.548
Valid N (listwise)	75								

Table 109 - Evaluation of normalcy of Q13 Organizational culture

Q14 – Leadership capabilities

The skewness values in *Table 110 - Evaluation of normalcy of Q14 Leadership capabilities* (below) are all between -1.0 and 0.5 suggesting a distribution of scores for this factor (Q14) that are moderately to approximately symmetric.

						Skewness		Kurtosis	
	N	***Min***	***Max***	***M***	***SD***	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
MC - 1	75	1	5	3.80	1.103	-.646	.277	-.417	.548
MC - 2	75	1	5	3.25	1.140	-.125	.277	-.687	.548
MC - 3	75	1	5	2.99	1.257	.110	.277	-.887	.548
MC - 4	75	1	5	3.00	1.053	.143	.277	-.428	.548
MC - 5	75	1	5	3.49	1.107	-.105	.277	-.861	.548
MC - 6	75	1	5	3.15	1.123	-.179	.277	-.497	.548
MC - 7	75	1	5	2.99	1.109	.088	.277	-.728	.548
MC - 8	75	1	5	3.00	1.090	.064	.277	-.597	.548
MC - 9	75	1	5	3.01	1.121	.210	.277	-.715	.548
MC - 10	75	1	5	2.71	1.010	.220	.277	-.403	.548
Valid N (listwise)	75								

Table 110 - Evaluation of normalcy of Q14 Leadership capabilities

Appendix 4. - Preliminary analysis of Survey data

Q15 – Organizational learning

The skewness values in *Table 111 - Evaluation of normalcy of Q15 Organizational learning* (below) are all between -.5 and 0.5 suggesting a distribution of scores for this factor (Q11) that are approximately symmetric.

	N	*Min*	*Max*	*M*	*SD*	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
OL - 1	75	1	5	3.51	1.167	-.410	.277	-.699	.548
OL - 2	75	1	5	2.95	1.077	-.025	.277	-.639	.548
OL - 3	75	1	5	2.87	1.178	.214	.277	-.762	.548
OL - 4	75	1	5	2.81	1.147	.157	.277	-.720	.548
OL - 5	75	1	5	2.91	1.093	.189	.277	-.462	.548
OL - 6	75	1	5	2.92	1.171	.159	.277	-.821	.548
OL - 7	75	1	5	2.79	1.177	.071	.277	-.739	.548
OL - 8	75	1	5	2.79	1.106	.253	.277	-.483	.548
OL - 9	75	1	5	2.85	1.123	.179	.277	-.718	.548
OL - 10	75	1	5	2.81	1.062	-.102	.277	-.888	.548
OL - 11	75	1	5	3.16	1.128	-.324	.277	-.669	.548
OL - 12	75	1	5	3.21	.977	-.267	.277	-.454	.548
OL - 13	75	1	5	3.11	1.060	-.078	.277	-.233	.548
Valid N (listwise)	75								

Table 111 - Evaluation of normalcy of Q15 Organizational learning

Appendix 5 - Exploration of relationships among variables

Appendix 5. - Exploration of relationships among variables

Exploration of relationships among variables

By studying the strength of relationships among variables, it is possible to predict the scores of a dependent variable from the scores of a number of independent variables. For example, correlation coefficients will provide a numerical indication of the strength and direction of relationships.

For this research project, the following relationships will be explored: Group 1 - Organizational Culture and dynamic capabilities (Sensing, Seizing, and Reconfiguration). Likewise, Group 2 - Leadership Capabilities and dynamic capabilities, and Group 3 - Organizational Learning and dynamic capabilities.

Correlations

Group 1 - Organizational Culture and dynamic capabilities (Sensing, Seizing, and Reconfiguration).

The relationship between Organizational Culture, and the dynamic capabilities (Sensing, Seizing, and Reconfiguration) was investigated using Pearson-Correlation. Preliminary analysis confirmed assumptions of normalcy. On the basis that a correlation coefficient (*r*) is considered small if *r* = .10 to .29, medium if *r* = .30 to .49, and large if *r* = .50 to 1.0. There are strong positive relationships between Organizational Culture and Sensing Capabilities ($r = .630$, $n = 75$, $p < .01$), Organizational Culture and Seizing Capabilities ($r = .513$, $n = 75$, $p < .01$), and Organizational Culture and Reconfiguration Capabilities ($r = .741$, $n = 75$, $p < .01$).

Group 1- Descriptive Statistics

	M	*SD*	*N*
Organizational Culture	**3.0741**	**.84961**	**75**
Sensing Capabilities	**3.2760**	**.69532**	**75**
Seizing Capabilities	**2.9317**	**.72634**	**75**
Reconfiguration Capabilities	**3.0778**	**.97195**	**75**

Appendix 5. - Exploration of relationships among variables

Group 1- Correlations

		Organizational Culture	Sensing Capabilities	Seizing Capabilities	Reconfiguration Capabilities
Organizational Culture	Pearson Correlation	1	.630**	.513**	.741**
	Sig. (2-tailed)		.000	.000	.000
	N	75	75	75	75
Sensing Capabilities	Pearson Correlation	.630**	1	.681**	.688**
	Sig. (2-tailed)	.000		.000	.000
	N	75	75	75	75
Seizing Capabilities	Pearson Correlation	.513**	.681**	1	.630**
	Sig. (2-tailed)	.000	.000		.000
	N	75	75	75	75
Reconfiguration Capabilities	Pearson Correlation	.741**	.688**	.630**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	75	75	75	75

****. Correlation is significant at the 0.01 level (2-tailed).**

Group 2 - Leadership Capabilities and dynamic capabilities (Sensing, Seizing, and Reconfiguration)

The relationship between Leadership Capabilities, and the dynamic capabilities (Sensing, Seizing, and Reconfiguration) was investigated using Pearson-Correlation. Preliminary analysis confirmed assumptions of normalcy. On the basis that a correlation coefficient (*r*) is considered small if *r* = .10 to .29, medium if *r* = .30 to .49, and large if *r* = .50 to 1.0. There are strong positive relationships between Leadership Capabilities and Sensing Capabilities ($r = .697$, $n = 75$, $p < .01$), Leadership Capabilities and Seizing Capabilities ($r = .590$, $n = 75$, $p < .01$), and Leadership Capabilities and Reconfiguration Capabilities ($r = .795$, $n = 75$, $p < .01$).

Group 2 - Descriptive Statistics

	M	*SD*	*N*
Leadership Capabilities	3.1387	.81372	75
Sensing Capabilities	3.2760	.69532	75
Seizing Capabilities	2.9317	.72634	75
Reconfiguration Capabilities	3.0778	.97195	75

Group 2 – Correlations

		Leadership Capabilities	Sensing Capabilities	Seizing Capabilities	Reconfiguration Capabilities
Leadership Capabilities	Pearson Correlation	1	.697**	.590**	.795**
	Sig. (2-tailed)		.000	.000	.000
	N	75	75	75	75
Sensing Capabilities	Pearson Correlation	.697**	1	.681**	.688**
	Sig. (2-tailed)	.000		.000	.000
	N	75	75	75	75

Appendix 5. - Exploration of relationships among variables

Seizing Capabilities	Pearson Correlation	.590**	.681**	1	.630**
	Sig. (2-tailed)	.000	.000		.000
	N	75	75	75	75
Reconfiguration Capabilities	Pearson Correlation	.795**	.688**	.630**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	75	75	75	75

****. Correlation is significant at the 0.01 level (2-tailed).**

Group 3 - Organizational Learning and dynamic capabilities (Sensing, Seizing, and Reconfiguration).

The relationship between Organizational Learning, and the dynamic capabilities (Sensing, Seizing, and Reconfiguration) was investigated using Pearson-Correlation. Preliminary analysis confirmed assumptions of normalcy. On the basis that a correlation coefficient (*r*) is considered small if *r* = .10 to .29, medium if *r* = .30 to .49, and large if *r* = .50 to 1.0. There are strong positive relationships between Organizational Learning and Sensing Capabilities (*r* = .715, *n* = 75, *p* < .01), Organizational Learning and Seizing Capabilities (*r* = .616, *n* = 75, *p* < .01), and Organizational Learning and Reconfiguration Capabilities (*r* = .802, *n* = 75, *p* < .01).

Group 3 - Descriptive Statistics

	M	*SD*	*N*
Organizational Learning	2.9754	.86837	75
Sensing Capabilities	3.2760	.69532	75
Seizing Capabilities	2.9317	.72634	75
Reconfiguration Capabilities	3.0778	.97195	75

Group 3 – Correlations

		Organizational Learning	Sensing Capabilities	Seizing Capabilities	Reconfiguration Capabilities
Organizational Learning	Pearson Correlation	1	.715**	.616**	.802**
	Sig. (2-tailed)		.000	.000	.000
	N	75	75	75	75
Sensing Capabilities	Pearson Correlation	.715**	1	.681**	.688**
	Sig. (2-tailed)	.000		.000	.000
	N	75	75	75	75
Seizing Capabilities	Pearson Correlation	.616**	.681**	1	.630**
	Sig. (2-tailed)	.000	.000		.000
	N	75	75	75	75
Reconfiguration Capabilities	Pearson Correlation	.802**	.688**	.630**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	75	75	75	75

****. Correlation is significant at the 0.01 level (2-tailed).**

Appendix 5. - Exploration of relationships among variables

In addition, there are strong positive relationships between Sensing Capabilities and Seizing Capabilities (r = .681, n = 75, p < .01), Sensing Capabilities and Reconfiguration Capabilities (r = .688, n = 75, p < .01), and Seizing Capabilities and Reconfiguration Capabilities (r = .630, n = 75, p < .01).

Multiple regression

Multiple regression was used here to explore the predictability of the antecedents (Organizational Culture, Leadership Capabilities, and Organizational Learning) in influencing the dynamic capabilities (Sensing, Seizing, and Reconfiguration).

Sample size is important for a successful multiple regression test. Based on the formula prescribed by Tabachnick and Fidell (2013, p. 123) n > 50 + 8m (where m = number of independent variables), the sample size required for this test is 74, which is less than the sample size *N* used for this test.

Group 1 – Sensing Capabilities (dependent variable) and Organizational Culture, Leadership Capabilities and Organizational Learning (independent variables).

Standard multiple regression was used to assess the ability of the three antecedents (Organizational Culture, Leadership Capabilities and Organizational Learning) to predict the level of Sensing Capabilities. Preliminary analyses were conducted to ensure no violations of the assumptions of normalcy, linearity, and multicollinearity. The Normal Probability Plot shows a reasonably straight line from bottom left to top right, and the Scatterplot of the residuals are roughly rectangular with no residual more than 3.3 or less than -3.3.

The Adjusted *R* Squared value of .484 indicates that 48.4% of the variance in Sensing Capabilities is explained by the antecedents. Of these independent variables Organizational Learning makes the greatest unique contribution (standardized coefficient B = .4, P < .020).

Group 1 - Descriptive Statistics

These scores match those presented above, and in the preliminary analysis section.

	M	*SD*	*N*
Sensing Capabilities	3.2760	.69532	75
Organizational Culture	3.0741	.84961	75
Leadership Capabilities	3.1387	.81372	75
Organizational Learning	2.9754	.86837	75

Group 1 – Correlations

Appendix 5. - Exploration of relationships among variables

The correlation coefficients in the table below are the same as those presented in the correlation tables above. There is no missing data, and $p < .01$.

		Sensing Capabilities	Organizational Culture	Leadership Capabilities	Organizational Learning
Pearson Correlation	Sensing Capabilities	1.000	.630	.697	.715
	Organizational Culture	.630	1.000	.744	.746
	Leadership Capabilities	.697	.744	1.000	.855
	Organizational Learning	.715	.746	.855	1.000
Sig. (1-tailed)	Sensing Capabilities	.	.000	.000	.000
	Organizational Culture	.000	.	.000	.000
	Leadership Capabilities	.000	.000	.	.000
	Organizational Learning	.000	.000	.000	.
N	Sensing Capabilities	75	75	75	75
	Organizational Culture	75	75	75	75
	Leadership Capabilities	75	75	75	75
	Organizational Learning	75	75	75	75

		Sensing Capabilities	Organizational Culture	Leadership Capabilities	Organizational Learning
Pearson Correlation	Sensing Capabilities	1.000	.582	.663	.690
	Organizational Culture	.582	1.000	.705	.725
	Leadership Capabilities	.663	.705	1.000	.848
	Organizational Learning	.690	.725	.848	1.000
Sig. (1-tailed)	Sensing Capabilities	.	.000	.000	.000
	Organizational Culture	.000	.	.000	.000
	Leadership Capabilities	.000	.000	.	.000
	Organizational Learning	.000	.000	.000	.
N	Sensing Capabilities	75	75	75	75
	Organizational Culture	75	75	75	75
	Leadership Capabilities	75	75	75	75
	Organizational Learning	75	75	75	75

Group 1 - Model Summary[b]

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.741a	.549	.530	.47691

a. Predictors: (Constant), Organizational Learning, Organizational Culture, Leadership Capabilities

b. Dependent Variable: Sensing Capabilities

Group 1 - Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	*t*	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.290	.229		5.623	.000	.833	1.748					

Appendix 5. - Exploration of relationships among variables

	Organizational Culture	.128	.103	.156	1.242	.218	-.077	.333	.630	.146	.099	.402	2.489
	Leadership Capabilities	.221	.138	.258	1.600	.114	-.054	.496	.697	.187	.128	.244	4.102
	Organizational Learning	.302	.130	.378	2.329	.023	.044	.561	.715	.266	.186	.242	4.132

a. Dependent Variable: Sensing Capabilities

Group 1 - Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Organizational Culture	Leadership Capabilities	Organizational Learning
1	1	3.923	1.000	.00	.00	.00	.00
	2	.046	9.206	.92	.03	.02	.07
	3	.020	13.888	.01	.96	.08	.17
	4	.010	19.919	.07	.00	.90	.76

a. Dependent Variable: Sensing Capabilities

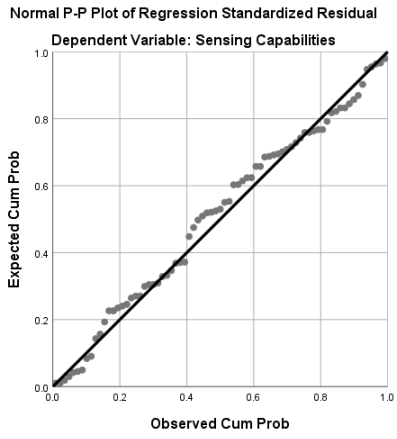
Group 1 - Residuals Statistics[a]

Standard residuals are not more than 3.3 or less than -3.3.

	Min	*Max*	*M*	*SD*	*N*
Predicted Value	1.9918	4.4704	3.2760	.51502	75
Std. Predicted Value	-2.493	2.319	.000	1.000	75
Standard Error of Predicted Value	.057	.241	.104	.036	75
Adjusted Predicted Value	2.0248	4.4676	3.2754	.51772	75
Residual	-1.10326	.97541	.00000	.46715	75
Std. Residual	-2.313	2.045	.000	.980	75
Stud. Residual	-2.422	2.103	.001	1.017	75
Deleted Residual	-1.20968	1.14878	.00064	.50482	75
Stud. Deleted Residual	-2.511	2.157	-.002	1.032	75
Mahal. Distance	.055	17.970	2.960	3.042	75
Cook's Distance	.000	.372	.021	.055	75
Centered Leverage Value	.001	.243	.040	.041	75

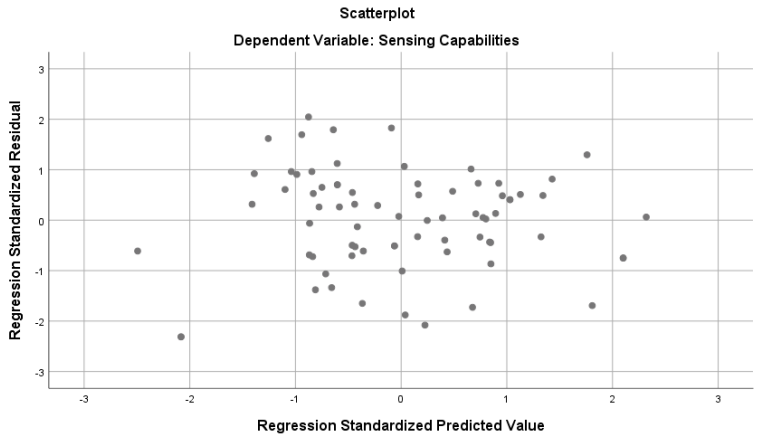
a. Dependent Variable: Sensing Capabilities

Group 1 – Normal P-P Plot



Appendix 5. - Exploration of relationships among variables

Group 1 – Scatterplot



Group 2 – Seizing Capabilities (dependent variable) and Organizational Culture, Leadership Capabilities and Organizational Learning (independent variables).

Standard multiple regression was used to assess the ability of the three antecedents (Organizational Culture, Leadership Capabilities and Organizational Learning) to predict the level of Seizing Capabilities. Preliminary analyses were conducted to ensure no violations of the assumptions of normalcy, linearity, and multicollinearity. The Normal Probability Plot shows a reasonably straight line from bottom left to top right, and the Scatterplot of the residuals are roughly rectangular. However, there is one case (71) with a standardized residual of 3.722 that is more than 3.3 or less than -3.3. In this case, the max value for Cook's Distance in the Residuals Statistics table (.237) is less than 1 so there should be no need to investigate further or remove the case.

The Adjusted *R* Squared value of .371 indicates that 37% of the variance in Seizing Capabilities is explained by the antecedents. Of these independent variables Organizational Learning makes the greatest unique contribution (standardized coefficient $B = .387$, $P < .043$).

Group 2 - Descriptive Statistics

	M	*SD*	*N*
Seizing Capabilities	2.9317	.72634	75
Organizational Culture	3.0741	.84961	75
Leadership Capabilities	3.1387	.81372	75
Organizational Learning	2.9754	.86837	75

Group 2 – Correlations

Appendix 5. - Exploration of relationships among variables

		Seizing Capabilities	Organizational Culture	Leadership Capabilities	Organizational Learning
Pearson Correlation	Seizing Capabilities	1.000	.513	.590	.616
	Organizational Culture	.513	1.000	.744	.746
	Leadership Capabilities	.590	.744	1.000	.855
	Organizational Learning	.616	.746	.855	1.000
Sig. (1-tailed)	Seizing Capabilities	.	.000	.000	.000
	Organizational Culture	.000	.	.000	.000
	Leadership Capabilities	.000	.000	.	.000
	Organizational Learning	.000	.000	.000	.
N	Seizing Capabilities	75	75	75	75
	Organizational Culture	75	75	75	75
	Leadership Capabilities	75	75	75	75
	Organizational Learning	75	75	75	75

Group 2 - Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.630a	.396	.371	.57609

a. Predictors: (Constant), Organizational Learning, Organizational Culture, Leadership Capabilities
b. Dependent Variable: Seizing Capabilities

Group 2 - Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.204	.277		4.345	.000	.652	1.757					
	Organizational Culture	.060	.124	.071	.486	.629	-.188	.308	.513	.058	.045	.402	2.489
	Leadership Capabilities	.184	.167	.207	1.106	.272	-.148	.517	.590	.130	.102	.244	4.102
	Organizational Learning	.324	.157	.387	2.064	.043	.011	.636	.616	.238	.190	.242	4.132

a. Dependent Variable: Seizing Capabilities

Group 2 - Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Organizational Culture	Leadership Capabilities	Organizational Learning
1	1	3.923	1.000	.00	.00	.00	.00
	2	.046	9.206	.92	.03	.02	.07
	3	.020	13.888	.01	.96	.08	.17
	4	.010	19.919	.07	.00	.90	.76

a. Dependent Variable: Seizing Capabilities

Group 2 - Casewise Diagnostics[a]

Case Number	Std. Residual	Seizing Capabilities	Predicted Value	Residual
71	3.722	4.50	2.3561	2.14394

Appendix 5. - Exploration of relationships among variables

a. Dependent Variable: Seizing Capabilities

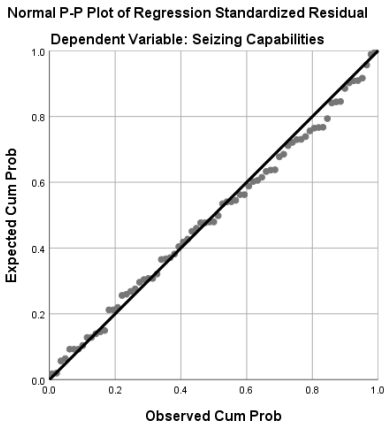
Group 2 - Residuals Statistics[a]

Residuals Statistics[a]

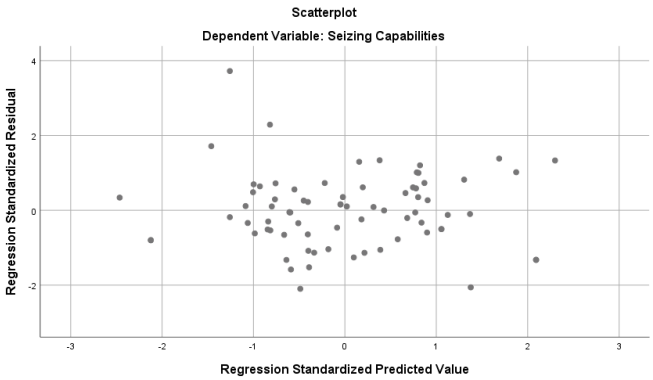
	Min	*Max*	*M*	*SD*	*N*
Predicted Value	1.8047	3.9831	2.9317	.45733	75
Std. Predicted Value	-2.464	2.299	.000	1.000	75
Standard Error of Predicted Value	.068	.292	.126	.044	75
Adjusted Predicted Value	1.7827	3.9587	2.9320	.45997	75
Residual	-1.20858	2.14394	.00000	.56429	75
Std. Residual	-2.098	3.722	.000	.980	75
Stud. Residual	-2.186	3.840	.000	1.012	75
Deleted Residual	-1.31211	2.28205	-.00029	.60234	75
Stud. Deleted Residual	-2.247	4.283	.005	1.044	75
Mahal. Distance	.055	17.970	2.960	3.042	75
Cook's Distance	.000	.237	.017	.034	75
Centered Leverage Value	.001	.243	.040	.041	75

a. Dependent Variable: Seizing Capabilities

Group 2 Normal P-P Plot



Group 2 – Scatterplot



Appendix 5. - Exploration of relationships among variables

Group 3 – Reconfiguration Capabilities (dependent variable) and Organizational Culture, Leadership Capabilities and Organizational Learning (independent variables).

Standard multiple regression was used to assess the ability of the three antecedents (Organizational Culture, Leadership Capabilities and Organizational Learning) to predict the level of Reconfiguration Capabilities. Preliminary analyses were conducted to ensure no violations of the assumptions of normalcy, linearity, and multicollinearity. The Normal Probability Plot shows a reasonably straight line from bottom left to top right, and the Scatterplot of the residuals are roughly rectangular. However, there is one case (1) with a standardized residual of 3.280, which although slightly less 3.3 or less than -3.3, has a max value for Cook's Distance in the Residuals Statistics table (1.245) that is more than 1 suggesting that there is a potential problem requiring further investigation or removal of the offending case.

The Adjusted *R* Squared value of .7 indicates that 70% of the variance in Reconfiguration Capabilities is explained by the antecedents. Of these independent variables Leadership Capabilities makes the greatest unique contribution (standardized coefficient *B* = .352, *P* < .008).

Group 3 - Descriptive Statistics

	M	*SD*	*N*
Reconfiguration Capabilities	3.0778	.97195	75
Organizational Culture	3.0741	.84961	75
Leadership Capabilities	3.1387	.81372	75
Organizational Learning	2.9754	.86837	75

Group 3 – Correlations

		Reconfiguration Capabilities	Organizational Culture	Leadership Capabilities	Organizational Learning
Pearson Correlation	Reconfiguration Capabilities	1.000	.741	.795	.802
	Organizational Culture	.741	1.000	.744	.746
	Leadership Capabilities	.795	.744	1.000	.855
	Organizational Learning	.802	.746	.855	1.000
Sig. (1-tailed)	Reconfiguration Capabilities	.	.000	.000	.000
	Organizational Culture	.000	.	.000	.000
	Leadership Capabilities	.000	.000	.	.000
	Organizational Learning	.000	.000	.000	.
N	Reconfiguration Capabilities	75	75	75	75
	Organizational Culture	75	75	75	75
	Leadership Capabilities	75	75	75	75

Appendix 5. - Exploration of relationships among variables

Organizational Learning	75	75	75	75

Group 3 - Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.844a	.712	.700	.53224

a. Predictors: (Constant), Organizational Learning, Organizational Culture, Leadership Capabilities
b. Dependent Variable: Reconfiguration Capabilities

Group 3 - Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.128	.256		-.499	.619	-.639	.383					
	Organizational Culture	.283	.115	.248	2.465	.016	.054	.512	.741	.281	.157	.402	2.489
	Leadership Capabilities	.370	.154	.310	2.406	.019	.063	.678	.795	.275	.153	.244	4.102
	Organizational Learning	.394	.145	.352	2.720	.008	.105	.683	.802	.307	.173	.242	4.132

a. Dependent Variable: Reconfiguration Capabilities

Group 3 - Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Organizational Culture	Leadership Capabilities	Organizational Learning
1	1	3.923	1.000	.00	.00	.00	.00
	2	.046	9.206	.92	.03	.02	.07
	3	.020	13.888	.01	.96	.08	.17
	4	.010	19.919	.07	.00	.90	.76

a. Dependent Variable: Reconfiguration Capabilities

Group 3 - Casewise Diagnostics[a]

Case Number	Std. Residual	Reconfiguration Capabilities	Predicted Value	Residual
1	3.280	4.50	2.7542	1.74582

a. Dependent Variable: Reconfiguration Capabilities

Group 3 - Residuals Statistics[a]

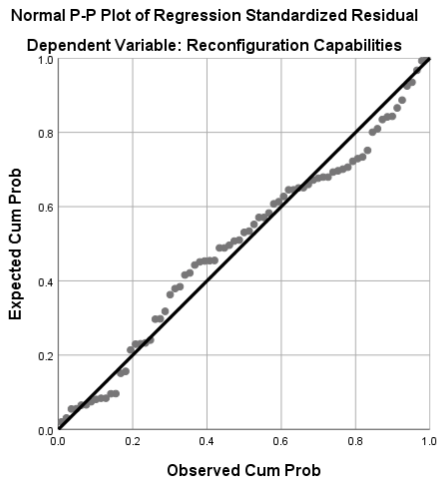
	Min	*Max*	*M*	*SD*	*N*
Predicted Value	1.0198	4.9869	3.0778	.82030	75
Std. Predicted Value	-2.509	2.327	.000	1.000	75
Standard Error of Predicted Value	.063	.269	.116	.040	75
Adjusted Predicted Value	.9844	4.9857	3.0729	.82708	75
Residual	-1.09494	1.74582	.00000	.52134	75
Std. Residual	-2.057	3.280	.000	.980	75
Stud. Residual	-2.272	3.803	.004	1.033	75

Appendix 5. - Exploration of relationships among variables

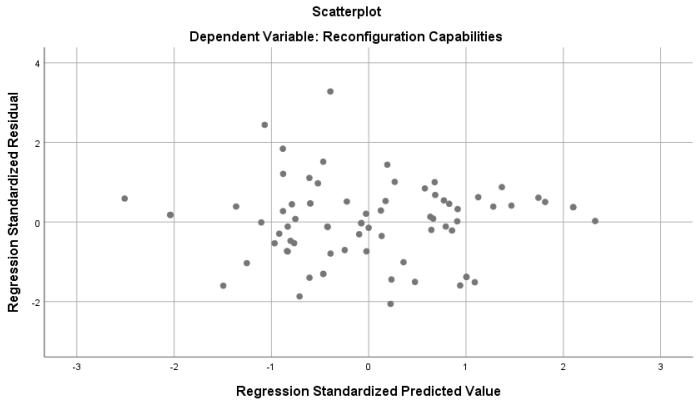
Deleted Residual	-1.33506	2.34710	.00492	.58255	75
Stud. Deleted Residual	-2.342	4.232	.009	1.065	75
Mahal. Distance	.055	17.970	2.960	3.042	75
Cook's Distance	.000	1.245	.032	.147	75
Centered Leverage Value	.001	.243	.040	.041	75

a. Dependent Variable: Reconfiguration Capabilities

Group 3 – Normal P-Plot



Group 3 – Scatterplot



Factor analysis

The primary purpose for conducting factor analysis is to reduce the number of variables in each factor. It is questionable whether it is worthwhile conducting factor analysis for this research project. Firstly, the sample size is relatively small compared to recommendations in the literature of at least 150. Secondly, the questionnaire design was based on factors used and confirmed in previous empirical studies. However, SEM model fit analysis was conducted used SPSS AMOS, and PCA factor analysis was conducted using SPSS to confirm number of factors.

Appendix 6 - Comparisons of groups – t-tests

Comparison of groups

Before conducting comparisons of groups, the data has gone through several steps to confirm its validity, account for any missing values, tested its normalcy, identified the strength of relationships, and checked the predictability of dependent variables from the independent variables. For this research project, all values have been accounted for, the tests for normalcy have revealed few exceptions that are not moderately of approximately symmetrical, and the regression testing has identified only two cases of outliers.

The purpose for conducting comparison of groups in this research project is to 'deep dive' into the data to identify any variance in scores between groups such as industry sector, age of organizations, size of organization, job level of respondent, tenure of respondent in job,

Summary of findings

Industry Sector Dynamics t-test

Table 6.8 - Industry Sector Dynamics (above) compares the means for the Industry Sector Dynamic Scores grouped by Industry Sector.

Ho: there is a statistically significant difference ($p < .05$) in the mean scores for Industry Sector Dynamics across industry sectors.

H1: the difference in the mean scores for Industry Sector Dynamics is not statistically significant across industry sectors.

Reject the null hypotheses as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors, therefore there is no significant difference between Industry Sector Dynamics across all of the Industry Sectors.

				P value of T-Test of equality of means Sig. (2-tailed) *CI*(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	3.02	.54501	-			
Mining & Manufacturing	6	3.00	.78174	.941	-		
Services	25	3.29	.47209	.064	.240	-	
Other	19	2.97	.72771	.775	.920	.077	-
Total	75	3.10	.59916				

Appendix 6. - Comparisons of groups – t-tests

Table 112- Industry Sector Dynamics

Sensing Capabilities t-test

Table 6.9 - Sensing Capabilities t-test (above) compares the means for the Sensing Scores grouped by Industry Sector.

Ho: there is a statistically significant difference ($p < .05$) in the mean scores for Sensing Capabilities across industry sectors.

H1: the difference in the mean scores for Sensing Capabilities is not statistically significant across industry sectors.

Reject the null hypotheses as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors, therefore there is no significant difference between Sensing Capabilities across all of the Industry Sectors.

				P value of T-Test of equality of means Sig. (2-tailed) CI(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	3.35	.60008	-			
Mining & Manufacturing	6	3.12	.79854	.432	-		
Services	25	3.40	.60484	.762	.340	-	
Other	19	3.07	.87181	.215	.905	.212	-
Total	75	3.28	.69532				

Table 113 - Sensing Capabilities t-test

Seizing Capabilities t-test

Table 6.10 - Seizing Capabilities t-test (above) compares the means for the Seizing Scores grouped by Industry Sector.

Ho: there is a statistically significant difference ($p < .05$) in the mean scores for Seizing Capabilities across industry sectors.

H1: the difference in the mean scores for Seizing Capabilities is not statistically significant across industry sectors.

Reject the null hypotheses as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors, therefore there is no significant difference between Seizing Capabilities across all of the Industry Sectors.

				P value of T-Test of equality of means Sig. (2-tailed) CI(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	2.99	.69683	-			
Mining & Manufacturing	6	2.92	.78925	.823	-		
Services	25	2.95	.73598	.844	.922	-	
Other	19	2.84	.78179	.493	.827	.621	-
Total	75	2.93	.72634				

Table 114- Seizing Capabilities t-test

Reconfiguration Capabilities t-test

Table 1 - Reconfiguration Capabilities t-test (above) compares the means for the Reconfiguration Capability Scores grouped by Industry Sector.

Appendix 6. - Comparisons of groups – t-tests

Ho: there is a statistically significant difference ($p < .05$) in the mean scores for Reconfiguration Capabilities across industry sectors.

H1: the difference in the mean scores for Reconfiguration Capabilities is not statistically significant across industry sectors.

Reject the null hypotheses as the *p* values (Sig. 2-tailed) are greater than .05 for all Industry Sectors, therefore there is no significant difference between Reconfiguration Capabilities across all of the Industry Sectors.

As the Sig. (2-tailed) value is greater than .05 for all Industry Sectors, there is no significant difference between Reconfiguration Capabilities across all of the Industry Sectors.

				P value of T-Test of equality of means Sig. (2-tailed) CI(.95)			
4. Industry sector	***N***	***M***	***SD***	**Oil & Gas**	**Mining & Manufacturing**	**Service**	**Other**
Oil & Gas	25	3.15	1.02325	-			
Mining & Manufacturing	6	3.00	.84327	.748	-		
Services	25	3.15	.84618	1.000	.706	-	
Other	19	2.92	1.13769	.494	.877	.454	-
Total	75	3.08	.97195				

Table 115- Reconfiguration Capabilities t-test

Appendix 7 - Email from David Teece

From: David Teece <dteece@thinkbrg.com>
Sent: Wednesday, 13 March 2019 7:35 AM
To: eco81135@myport.ac.uk
Subject: RE: [EXT] Form Submission - Contact - Dynamic Capabilities in a Saudi Arabian Context
Attachments: Vision 2030 and PPPs_112216_FINAL.PPTX; Tartastan_Kazan Presentation_April 2014_Final Version.pptx; Kuwait Speakers Series_February 2016_Final.pptx; 114. (2014) with Shuen and Feiler - Dynamic Capabilities in the Upstream....pdf; 115. (2014) with Paul Feiler - Case Study- Dynamic Capabilities_.pdf; 51. (1994) with Rumelt, Dosi, and Winter - Understanding Corporate Cohe....pdf; 126. (2017) Towards a Capability Theory of Innovating Firms (Cambridge).pdf; 133. (2017) Dynamic capabilities as (workable) management systems theor....pdf

Andrew,
I'm not aware of anything published on dynamic capabilities and Saudi Arabia. I attach some slides I've given in the Middle East on various topics.
I also attach a couple of oil & gas & dynamic capabilities articles (with Paul Feiler) plus a few others:
"Vision 2030 and Private Public Partnerships: Using Capabilities and Contracts Theory to Understand Ecosystem-Enabled Economic Development" Presentation, Saudi Arabia, 2016
"Regional Clusters, Ecosystems and Dynamic Capabilities: Lessons from Silicon Valley" Presentation, Tartastan, 2014
"Transforming to a Knowledge Economy: The Role of Innovation Ecosystems and Dynamic Capabilities", Presentation, Kuwait University, February 2016.
"Understanding Corporate Coherence: Theory and Evidence" (with R. Rumelt, G. Dosi, and S. Winter), Journal of Economic Behavior and Organization 23:1 (January 1994).
"Dynamic Capabilities in the Upstream Oil and Gas Sector: Managing Next Generation Competition" (with Amy Shuen and Paul Feiler), Energy Strategy Review (September 2014).
"Case Study: Dynamic Capabilities and Upstream Strategy: Supermajor EXP" (with Paul Feiler), Energy Strategy Review (September 2014).
"Towards a Capability Theory of (Innovating) Firms: Implications for Management & Policy," Cambridge Journal of Economics (2017).
"Dynamic Capabilities as (Workable) Management Systems Theory," Journal of Management and Organization (2017), 1–10.

Best regards,
David
David J. Teece | Chairman

Berkeley Research Group, LLC
2200 Powell Street, Suite 1200 | Emeryville, CA 94608
D 510.285.3221 | O 510.285.3300 | F 510.654.7857
dteece@thinkbrg.com | thinkbrg.com

From: Squarespace <no-reply@squarespace.info>
Sent: Monday, March 11, 2019 3:00 PM
To: Mary Xjimenez <MXjimenez@thinkbrg.com>
Subject: [EXT]Form Submission - Contact - Dynamic Capabilities in a Saudi Arabian Context
Name: Andrew Cox

Appendix 7. - Email from David Teece

Email Address: eco81135@myport.ac.uk
Subject: Dynamic Capabilities in a Saudi Arabian Context
Message: Dear Professor Teece,
I am a "late career" researcher currently in the third year of a professional doctorate (DBA) at the University of Portsmouth (UK). My research topic is "Dynamic Capabilities in a Saudi Arabian Context". My rationale for selection of this topic is a reflection of my extensive experience (20+ years) working in Oil & Gas, and Mining & Manufacturing industries in Saudi Arabia, where I have continually witnessed the need for practical wisdom in managing change and aligning organisational transformation with a changing business environment. The Saudi Government has a history of five year economic plans intended to transform their economy, and the recent Saudi Vision 2030, probably goes further than any in challenging industries to grow, and reducing the reliance on oil & gas. However, from my experience, they have a heavy dependency on the advice of external consultants in "sensing" opportunities, threats and risks. As a consequence, in my opinion, organisations don't develop pragmatic and independent internal sensing capabilities.
When it comes to seizing opportunities, from my experience, Saudi organisations are typically heavily encumbered by programme persistence. I could cite many other examples drawn from personal observations but too numerous to include here.

I haven't been able to find any previous empirical studies of dynamic capabilities based in Saudi Arabia, and I wondered if you are are aware of any. I also wanted to test your willingness to collaborate on the publication of my findings.

Regards,
Andrew Cox
(Sent via David J. Teece)

Appendix 8 - Research Ethics Review Checklist - FORM UPR16

The project complied with all requirements set by the University of Portsmouth Ethics Committee for doctoral students.

FORM UPR16

Research Ethics Review Checklist

Please include this completed form as an appendix to your thesis (see the Research Degrees Operational Handbook for more information

UNIVERSITY OF PORTSMOUTH

Postgraduate Research Student (PGRS) Information				**Student ID:**	443016
PGRS Name:	Andrew Lindsay Cox				
Department:	Operations and Systems Management	**First Supervisor:**	Professor Mark Xu		
Start Date: (or progression date for Prof Doc students)		**Progressed 11 July 2017**			
Study Mode and Route:	Part-time ☒ Full-time ☐	MPhil ☐ PhD ☐		MD ☐ Professional Doctorate ☒	

Title of Thesis:	Dynamic Capabilities within a Saudi Arabian Context
Thesis Word Count: (excluding ancillary data)	~52,000

If you are unsure about any of the following, please contact the local representative on your Faculty Ethics Committee for advice. Please note that it is your responsibility to follow the University's Ethics Policy and any relevant University, academic or professional guidelines in the conduct of your study

Although the Ethics Committee may have given your study a favourable opinion, the final responsibility for the ethical conduct of this work lies with the researcher(s).

UKRIO Finished Research Checklist:
(If you would like to know more about the checklist, please see your Faculty or Departmental Ethics Committee rep or see the online version of the full checklist at: http://www.ukrio.org/what-we-do/code-of-practice-for-research/)

a) Have all of your research and findings been reported accurately, honestly and within a reasonable time frame?	YES ☒ NO ☐
b) Have all contributions to knowledge been acknowledged?	YES ☒ NO ☐
c) Have you complied with all agreements relating to intellectual property, publication and authorship?	YES ☒ NO ☐
d) Has your research data been retained in a secure and accessible form and will it remain so for the required duration?	YES ☒ NO ☐
e) Does your research comply with all legal, ethical, and contractual requirements?	YES ☒ NO ☐

Candidate Statement:

I have considered the ethical dimensions of the above named research project, and have successfully obtained the necessary ethical approval(s)

Ethical review number(s) from Faculty Ethics Committee (or from NRES/SCREC):	BAL/2018/E535/COX

If you have *not* submitted your work for ethical review, and/or you have answered 'No' to one or more of questions a) to e), please explain below why this is so:

Not Applicable

Signed *(PGRS)*: 	**Date:** 30-May-2020

Appendix 9 – Favourable Ethical Opinion

FAVOURABLE ETHICAL OPINION

Study Title: Dynamic Capabilities within a Saudi Arabian Context

Reference Number: BAL/2018/E535/COX

Date Resubmitted: 5th March 2019

Thank you for resubmitting your application to the Faculty Ethics Committee and for making the requested changes/ clarifications.

I am pleased to inform you that the Faculty Ethics Committee was content to grant a favourable ethical opinion of the above research on the basis described in the submitted documents listed at Annex A, subject to standard general conditions (*See Annex B)*.

Please note that the favourable opinion of the Faculty Ethics Committee does not grant permission or approval to undertake the research/ work. Management permission or approval must be obtained from any host organisation, including the University of Portsmouth or supervisor, prior to the start of the study.

Wishing you every success in your research

Peter Scott, Chair of the Faculty of Business and

Law Ethics Committee

Annexes

A - Documents reviewed

B - After ethical review

ANNEX A **Documents reviewed**